



A word to our valued customers,

CV Instruments developed and marketed their first hardness testing instrument in 1971. Now, 35 years later, CV Instruments has taken an important position in the metals and plastics industry, offering solutions for many materials testing problems.

Thousands of CV Instruments products have been supplied to customers around the globe. In 2004 CV Instruments moved the major part of its business to a new European distribution centre located in Maastricht, The Netherlands. This decision was made to offer knowledgeable support and first class service on a wider variety of products while having access to a good geographic environment for fast distribution throughout Europe.

At the same time, the product range of CV Instruments was completed with the portable testing instruments from the world famous manufacturer TIME Group Inc.

Reliable Testing Equipment is essential for the production of an endless variety of industrial and consumer products.

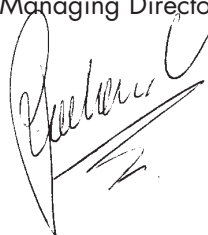
Our products are manufactured at facilities in the United Kingdom, Germany, Japan and China. We emphasize that regardless of the manufacturing location, each product is guaranteed to be of the finest quality, as you expect them to be from a first class manufacturer.

Our global sales network consisting of distributors and agents, located in almost each country of the world, offers you a fast and reliable access to local inventory and the best possible after sales service.

With our eyes firmly focused on the future, we will respond to the needs of the industry and laboratories who are demanding greater precision, improved speed and solid solutions for better efficiency.

We have the pleasure to offer you our 2007 CV Instruments Essential Testing Instruments catalogue. This free of charge catalogue will be your guide to the right solution for your testing requirements.

Roland Engbersen
Managing Director

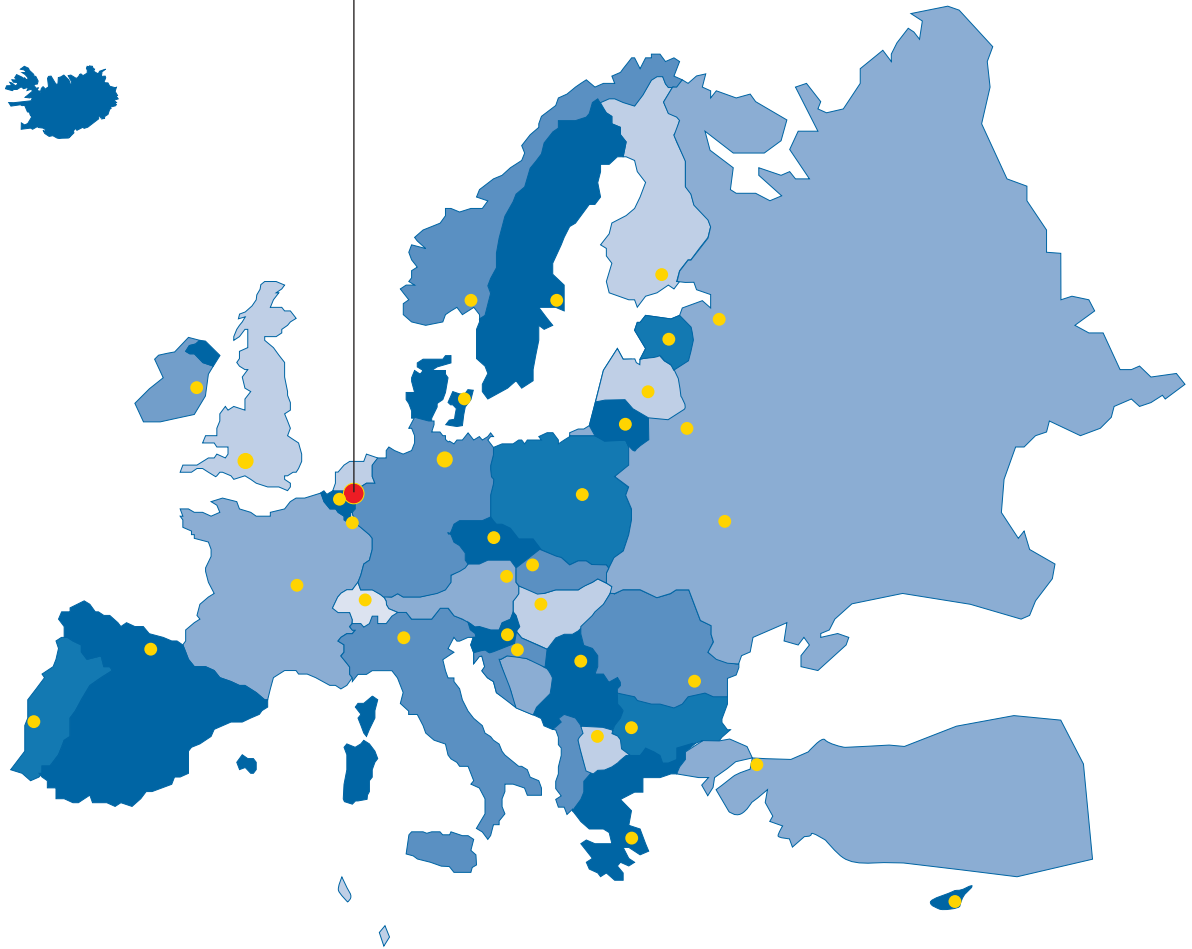


BOWERS METROLOGY GROUP

CV Instruments Europe BV
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The Bowers Metrology Group of companies

CV Instruments Europe BV

European
Distribution
Centre

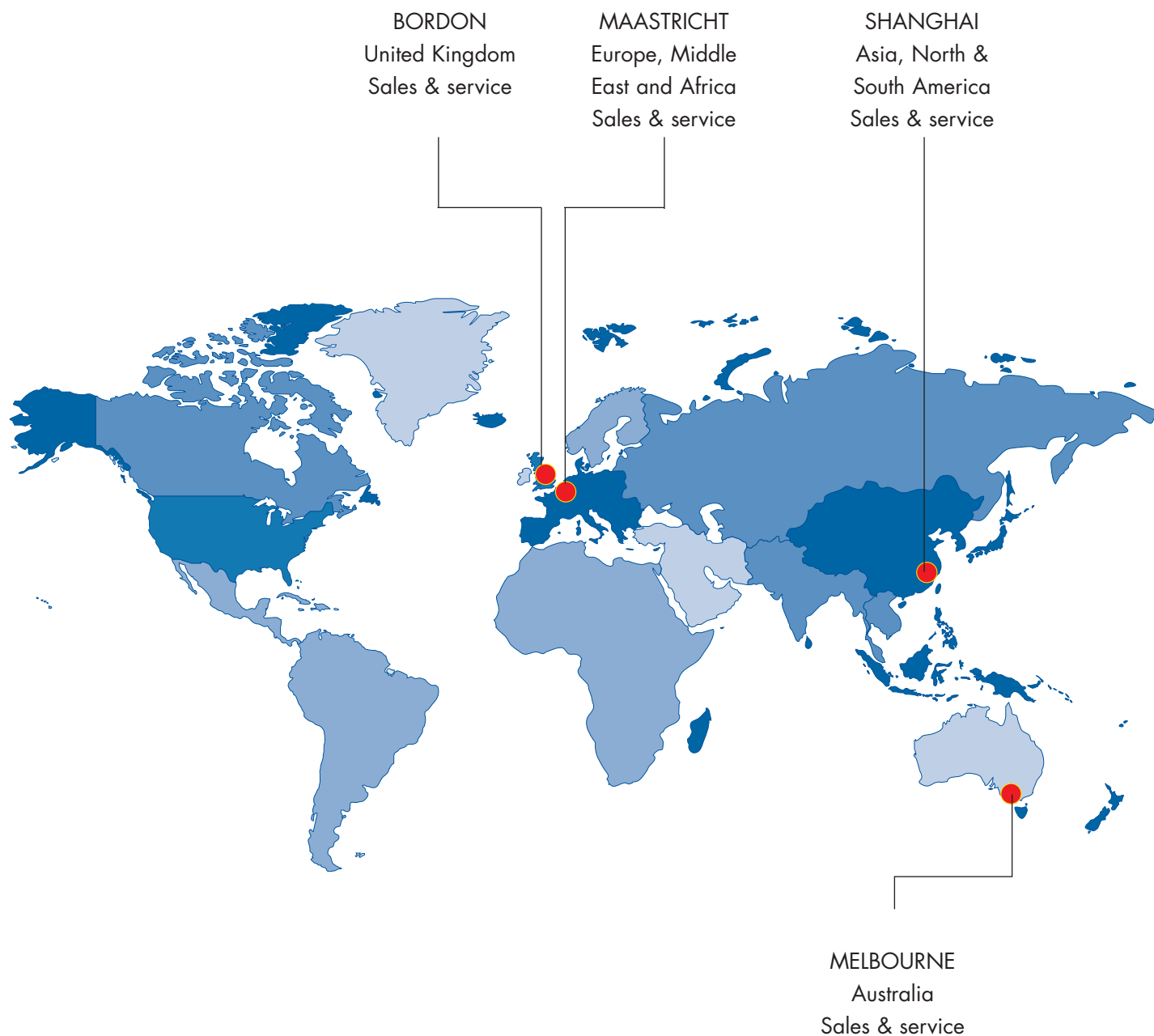


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**All instruments in this catalogue can be calibrated and supplied with a certificate on request.
Please do not hesitate to contact us for details.**

Mutual recognition of equivalent calibration certificates.
List of participating organisations in the multilateral agreement WECC
dated December 1st 1989 and brands showing on the calibration certificates.



The Netherlands

Raad voor Accreditatie (RvA)
(Dutch Council for Accreditation)

Raad voor Accreditatie
P.O. Box 2768, NL-3500 GT
Utrecht, The Netherlands
Tel: +31 30 239 4500
Fax: +31 30 239 4539



Sweden

The Swedish Board for Accreditation and
Conformity Assessment (SWEDAC)

SWEDAC
Box 878
SE-50115 Borås, Sweden
Tel: +46 33 17 7700
Fax: +46 33 10 1392



Germany

Deutscher Kalibrierdienst (DKD)
(German Calibration Service)

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100, D-38116
Braunschweig, Germany
Tel: +49 531 592 1901
Fax: +49 531 592 1905



Spain

Entidad Nacional de Acreditación (ENAC)

ENAC
Serrano, 240, 3º
ES-28016 Madrid, Spain
Tel: +34 91 457 3289
Fax: +34 91 458 6280



France

Comité Français d'Accreditation (COFRAC)

COFRAC
37, rue de Lyon
FR-75012 Paris, France
Tel: +33 1 44 68 82 20
Fax: +33 1 44 68 82 21



Denmark

Danish Accreditation and Metrology fund
(DANAK)

Danish Accreditation and Metrology fund
Dyregardsvej 5B
DK-2740 Skovlunde, Denmark
Tel: +45 77 33 95 00
Fax : +45 77 33 95 01



United Kingdom

United Kingdom Accreditation Service (UKAS)

Technical Enquiries Office UKAS
21-47 High Street, Feltham, Middlesex
England TW13 4UN
Tel: +44 181 917 8400
Fax: +44 181 917 8500



Belgium

Belgische Kalibratie Organisatie
Organisation Belge d'etalonnage (BKO-OBE)

Ministry of Economic Affairs
Boulevard Emile Jacqmain 154
BE-1000 Brussels, Belgium
Tel: +32 2 206 4680
Fax: +32 2 206 5742



Italy

Servizio di Taratura in Italia (SIT)
(Italian Calibration Service)

Comitato del SIT, C/ IEN
Strada delle Cacce 73
IT-10135 Torino, Italy
Tel: +39 11 39 77 329
Fax: +39 11 39 77 372



Norway

Norwegian Accreditation, (NA)

Norwegian Metrology and Accreditation Service
Justervesenet
Fetveien 99
NO-2007 Kjeller, Norway
Tel: +47 64 848600
Fax: +47 64 848601

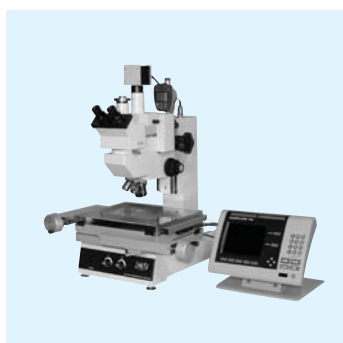
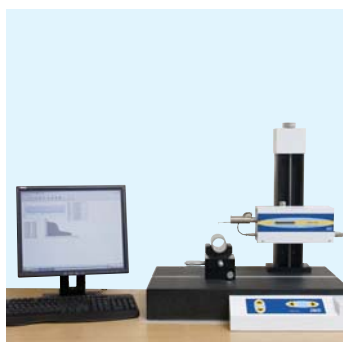


Instruments



HARDNESS TESTERS - DUROMETERS - SURFACE FINISH TESTERS
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

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ROCKWELL TYPE HARDNESS TESTER CV-600A™

Ready-to-test analogue Rockwell type tester with lever system for direct load application

- Basic regular Rockwell type tester offering accuracy, reliability and durability at an extremely affordable price
- Rugged construction, will stand up to the harshest environments
- Direct analogue reading of Rockwell scales HRC, B, A, F
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Mechanical test cycle without the need of electricity
- Easy load force selection by robust dial knob
- Oil brake with variable damping by adjustable knob
- Large capacity to accommodate large test specimen
- Standard delivery including accessories ready for testing all scales



Technical specifications

Rockwell scales	A, B, C, F
Hardness resolution	0.5 of a Rockwell unit
Test loads	10kgf preload / 60, 100, 150kgf total load
Display	Dial indicator
Test force application	By force lever
Load duration	Manually set via oil damper
Data output	Non
Accuracy	Conforms to EN-ISO 6508 and ASTM E-18
Specimen accommodation	Vertical space 170mm (6.7") Horizontal space (from centre-line) 165mm (6.5")
Specimen access	External surfaces Cylindrical surfaces down to 3mm diameter
Power supply	Non
Machine dimensions	Width 150mm, depth 485mm, height 700mm
Machine weight	Approx. 85kg

Standard delivery

- Main unit
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Hardness test block ±60HRC
- Hardness test block ±25HRC
- Hardness test block ±85HRB
- Spare balls 1/16" (5 pcs)
- Flat anvil ø 60mm
- Large flat anvil ø 150mm
- V-anvil ø 40mm
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual

Optional accessories

- Certified test blocks
- Certified indentors & balls

ROCKWELL TYPE HARDNESS TESTER CV-600MA™

Motorized hardness tester for regular Rockwell scales

- Regular Rockwell scales
- Electronic control of load duration (dwell time)
- Motorized testing procedure
- Accuracy, reliability and durability at an extremely affordable price
- Rugged construction, will stand up to the harshest environments
- Accuracy conforms to EN-ISO 6508
- Standard delivery including accessories ready for testing all scales



Technical specifications

Rockwell scales	A, B, C, F
Hardness resolution	0.5 of a Rockwell unit
Test loads	60, 100, 150kgf (10kgf preload)
Display	Dial indicator
Test cycle	Motorized (preload applied manually)
Dwell time	0-30 sec (5 sec. step)
Data output	Non
Accuracy	Conforms to EN-ISO 6508
Specimen accommodation	Vertical space 170 mm (6.7") Horizontal space from centre-line 160 mm (6.3")
Specimen access	External surfaces Cylindrical surfaces down to 3 mm diameter
Power supply	220V 50Hz
Machine dimensions	Width 150 mm, depth 485 mm, height 700mm
Machine weight	Approx. 85kg

Standard delivery

- Main unit
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare lamps 6V - 12W (2 pcs)
- Hardness test block ±60HRC
- Hardness test block ±25HRC
- Hardness test block ±85HRB
- Spare balls 1/16" (5 pcs)
- Flat anvil ø 60 mm
- Flat anvil ø 150 mm
- V-anvil ø 40 mm
- Power cable
- Fuse 0.5A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & user manual

Optional accessories

- Certified test blocks
- Certified indentors & balls

ROCKWELL TYPE HARDNESS TESTER CV-600D™

Bright LCD display with hardness conversion, tolerance check, built-in printer and data-output

- Digital LCD reading of 15 regular Rockwell scales!
- Conversion to all other hardness scales such as Vickers and Brinell
- Menu operated LCD screen with many functions such as GO/NO GO judgement, Conversions, Load cycle indication, Date, Time
- Integrated printer for test result and statistics
- RS-232 data output to Microsoft Hyperterminal, 'Win Wedge' etc
- Accuracy, reliability and durability at extremely affordable price
- Rugged construction, will stand up to the harshest environments
- Accuracy conforms to EN-ISO 6508 and ASTM E-18
- Easy load force selection by robust dial knob
- Large working space accomodates also larger specimen
- Standard delivery including accessories ready for testing
- Electronic software calibration mode



Technical specifications

Rockwell scales	A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
Display conversion to	HV, HB, HR scales
Hardness resolution	0.1 of a Rockwell unit
Test loads	60, 100, 150kgf (10kgf preload)
LCD Display	Hardness value, Rockwell scale, Test force indicator, Dwell time, limits with tolerance check GO/NG, number of tests, X-bar average, standard deviation, range R
Data entry	Membrane keypad
Test force application	Automatic main load application
Dwell time	4-99 sec
Data output	Built-in printer and RS-232C
Accuracy	Conforms to EN-ISO 6508 and ASTM E-18
Specimen accommodation	Vertical space 170mm (6.7") Horizontal space (from centre-line) 165mm (6.5")
Specimen access	External surfaces, Cylindrical surfaces down to 3mm diameter
Power supply	220/240V 50Hz
Machine dimensions	227mm x 516mm x 715mm
Net weight	85kg

Standard delivery

- CV-600D main unit
- Built-in thermal printer
- Data-output RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Flat anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil ø 40mm
- Hardness test blocks:
±60HRC, ±40HRC, ±85HRB
- Power cable
- Fuse 1A (2 pcs)
- Adjustable feet (4 pcs)
- Spindle protection cover
- Solid accessories case
- CV Instruments certificate
- Installation & users manual

Optional accessories

- Clamping nose
- Certified test blocks
- Certified indentors & balls
- Pedestal spot anvil ø 10mm

HARDNESS ACCESSORIES CV-600 SERIES™

Selection of anvils for correct hardness testing

Tips on using an anvil for accurate hardness testing

- To keep the test specimen stable and provide support, always use the smallest anvil possible.
- When using test blocks, a pedestal spot anvil is recommended.
- Always ensure that the anvil's top surface and its supporting contact surface are free of dirt, swarf, oil or corrosion.
- If the indenter or other object has left a mark on the anvil test surface or seat, the anvil will cause false readings and should be replaced.



Testing table large

The \varnothing 150mm table is the most popular work support for large test specimens. The table is screwed onto the elevating screw. The vertical capacity will be reduced by about 25mm.



Flat anvil

The \varnothing 60mm flat anvil is used to support many flat specimens perpendicular to the indenter.



V-anvil

The standard V-anvil is used with cylindrical shaped rods or tubes of \varnothing 6mm or larger. (Not suitable for thin wall or soft tubing).



Pedestal spot anvil

The \varnothing 10mm spot anvil is used with small parts and sheet metal where not much support is required. This anvil should be used with test blocks.



Cylindrical anvil

This anvil is designed to support cylindrical work and has a capacity of 50mm to 203mm (2"-8"). A smaller version is also available from 6mm to 76mm (1/4"-3").



Eyeball anvil

Mounted on an elevating screw, this anvil is designed for test pieces that have a slight taper. The ball is clamped into position by a clamping nut which allows the indenter to come into contact with a flat surface.



Clamping protection nose

Device to be mounted on indenter head, to keep the specimen in place by internal spring force, and to protect the indenter against collision.

PREMIUM ROCKWELL TYPE HARDNESS TESTER EW-650 SERIES™

LCD touch screen, superior functionality, ultra high precision, 3 models available

- Measures all standard Rockwell hardness values
- Superior GR & R results!
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame, allowing large dimension work pieces
- ASTM, ISO, JIS compliant
- ESELOAD™ unique motorized load application system, auto selection of main loads depending on HR scale (656 & 657 only)
- Superior depth measuring system through Heidenhain (Germany) transducer
- ESETOUCH™ advanced LCD touch screen & operator panel with user friendly menu operation in multiple languages
- High speed preload, loading and unloading procedure for ultra high efficiency
- ESELIFT™ (657 and 677 only) motorized elevating screw simplifies and speeds up test operation
- Automatic measurement procedure, load / dwell / unload (655 & 656 models)
- ESEMATIC™ fully automatic positioning and measuring procedure (positioning, preload, load, dwell, unload (657 only))
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 20,000 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including electronic linearity calibration, tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Connects with PC or SPC network via built-in bi-directional USB2 connector



The EW-657 ESEMATIC™ model features standard a fully automatic system for high speed production measurement.

Technical specifications

Rockwell scales	A,B,C,D,E,F,G,K,L,M,P,R,V
Conversion to	HV, HB, other HR scales
Hardness resolution	0.1 or 0.01 of a Rockwell unit
Pre-load	10kgf
Main loads	60, 100, 150kg
Pre-load application	Manual (automatic for 657 ESEMATIC™)
Test load application	Fully automatic
Data output	Built in high speed printer & USB2
LCD Display	Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics
Specimen accommodation	Vertical space 275mm Horizontal space (from centre of elevator) 190mm
Power supply	110/240V, 50 – 60Hz
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)
Net weight	Approx. 140kg

EW-655 ESETOUCH™	Manual load Manual elevator lead screw
EW-656 ESELOAD™	Automatic load selection Manual elevator lead screw
EW-657 ESEMATIC™	Automatic load selection Manual elevator lead screw/ Full automatic

Standard delivery

- Main unit
- Built-in printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat testing anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil 40mm
- Hardness test blocks:
± 60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

Optional accessories

- Clamping and indenter protection nose
- UKAS, DKD, ASTM/NIST Certified test blocks
- UKAS, DKD, ASTM/NIST Indentors & balls
- Pedestal spot anvil
- Special support systems for large work pieces

PREMIUM TWIN SCALE ROCKWELL TYPE HARDNESS TESTER EW-670 SERIES™

LCD touch screen, superior functionality, ultra high precision, 3 models available

- Measures all Standard & Superficial Rockwell hardness values
- Superior GR & R results!
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame allowing large dimension work pieces
- ASTM, ISO, JIS compliant
- ESELOAD™ unique motorized load application system, auto selection of main loads depending on HR scale (676 & 677 only)
- Superior depth measuring system through Heidenhain (Germany) transducer
- ESETOUCH™ advanced LCD touch screen & operator panel with user friendly menu operation in multiple languages
- High speed preload, loading and unloading procedure for ultra high efficiency
- ESELIFT™ (677 only) motorized elevating screw simplifies and speeds up test operation
- Automatic measurement procedure, load / dwell / unload (677 only)
- ESEMATIC™ fully automatic positioning and measuring procedure (positioning, preload, load, dwell, unload (676 and 677 models))
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 20,000 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including electronic linearity calibration, tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Connects with PC or SPC network via built-in bi-directional USB2 connector



The EW-677 ESEMATIC™ model offers standard a fully automatic system for high speed production measurement.

Technical specifications

Rockwell scales	Standard Superficial	A,B,C,D,E,F,G,K,L,M,P,R,V 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Conversion to	HV, HB, other HR scales	
Hardness resolution	0.1 or 0.01 of a Rockwell unit	
Pre-load	3kgf / 10kgf	
Main loads	15, 30, 45, 60, 100, 150kg	
Pre-load application	Manual (automatic for 677 ESEMATIC™)	
Test load application	Fully automatic	
Data output	Built-in high speed printer & USB2	
LCD Display	Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics	
Specimen accommodation	Vertical space 275mm	Horizontal space (from centre of elevator shaft) 190mm
Power supply	110/240 volt, 50 – 60Hz	
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)	
Net weight	Approx. 140 kg	

EW-675 ESETOUCH™	Manual load Manual elevator lead screw
EW-676 ESELOAD™	Automatic load selection Manual elevator lead screw
EW-677 ESEMATIC™	Automatic load selection Motorized elevator lead screw/ Full automatic

Standard delivery

- Main unit
- Built-in printer
- Data-output USB2 and RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat testing anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil 40mm
- Hardness test blocks:
± 60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

Optional accessories

- Clamping and indenter protection nose
- UKAS, DKD, ASTM/NIST
Certified test blocks
- UKAS, DKD, ASTM/NIST
Indentors & balls
- Pedestal spot anvil
- Special support systems for large
work pieces

PREMIUM CLOSED LOOP ROCKWELL TYPE HARDNESS TESTER EW-6000 SERIES™

High accuracy and repeatability through closed loop and load cell combined system, 4 models available

- Measures at choice Standard, Superficial or combined Rockwell hardness values
- Superior GR & R results!
- Simultaneous conversion to HV, HB and other HR scales
- Rugged fine casted frame allowing large dimension work pieces
- ASTM, ISO, JIS and other global standards compliant
- Unique closed loop and load cell combined system, guaranteeing that pre- and main load are applied with absolute accuracy, no variety between testers and independence of the operator skills
- Superior depth measuring system through high precision Heidenhain (Germany) glass scale
- No elevating screw, simplifies test operation and enhances accuracy
- Storage of 50 test programs and tester settings, allowing you to set up your tester in just seconds
- Alpha numerical data entry
- Continuous automatic "online" statistics, incl. average of readings etc.
- Storage of 20,000 single hardness values
- Go / No Go mode
- Convex and concave measuring mode
- Calibration date expired (reminder)
- Service mode including tests counter, maintenance system
- Prints statistics to built-in printer or external printer
- Connects with PC or SPC network via built-in bi-directional RS232C connector

The EW-6000 series model offer standard a fully automatic system with the advantage of a fixed measuring table.
Also available as a MASTER Rockwell configuration for calibration of reference hardness test blocks.

Please ask for availability in your country.



Technical specifications

Rockwell scales	Standard Superficial	A, B, C, D, E, F, G, H, K, L, M, P, R, V 15N, 30N, 45N, 15T, 30T, 45T, 15W, 30W, 45W, 15X, 30X, 45X, 15Y, 30Y, 45Y
Conversion to	HV, HB, other HR scales	
Hardness resolution	0.1 & 0.01 of a Rockwell unit	
Pre-load	3kgf / 10kgf	
Main loads	15, 30, 45, 60, 100, 150kg through controlled closed loop system	
Pre-load application	Fully automatic	
Test load application	Fully automatic	
Data output	Built-in high speed printer & RS 232C	
LCD Display	Hardness value, conversion value, test force indicator, dwell time, memory contents, all machine settings, go / no go, all statistics, and many more	
Specimen accommodation	Vertical space 250mm Horizontal space (from centre of elevator shaft) 220mm	
Power supply	110/240V, 50 – 60Hz	
Machine dimensions	Approx. 940mm x 390mm x 670mm (HxWxD)	
Net weight	Approx. 120kg	
EW-6000 R™	Load cell / Closed loop Standard Rockwell	
EW-6000 SR™	Load cell / Closed loop Superficial Rockwell	
EW-6000 TR™	Load cell / Closed loop Standard & Superficial Rockwell	
EW-6000 ESEMASTER™	Load cell / Closed loop Standard & Superficial Rockwell MASTER Rockwell	

Standard delivery

- Main unit
- Built-in printer
- Data output RS-232C
- Diamond Rockwell indenter
- Rockwell ball indenter 1/16"
- Rockwell testing balls
- Flat testing anvil ø 60mm
- Flat anvil ø 150mm
- V-anvil 40mm
- Hardness test blocks:
±60 HRC, ±40 HRC, ±85 HRB
- Power cable
- Spare fuse
- Adjustable feet (4 Pcs)
- Spindle protection cover
- Machine cover
- Solid accessories case
- ESEWAY® certificate
- User and installation manual

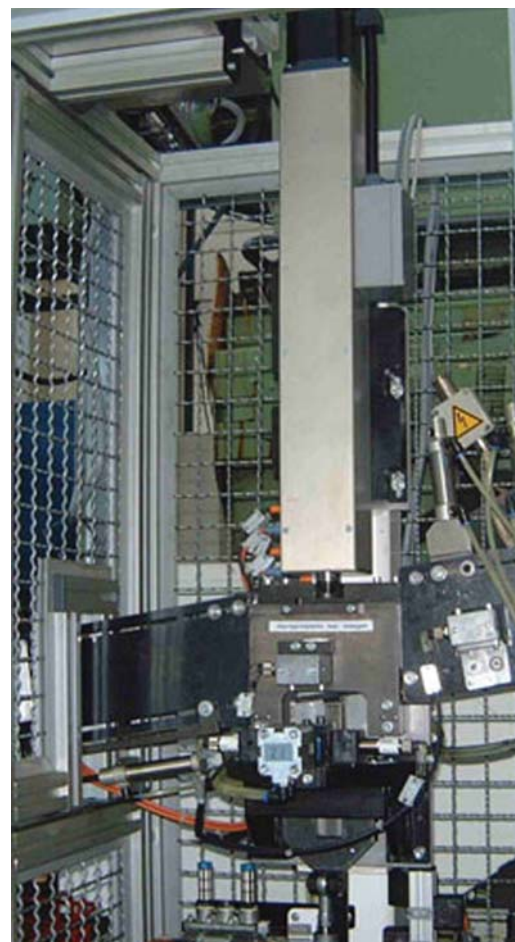
Optional accessories

- Clamping and indenter protection nose
- UKAS, DKD, ASTM/NIST
Certified test blocks
- UKAS, DKD, ASTM/NIST
Indentors & balls
- Pedestal spot anvil
- Heavy load testing tables
- Special support systems for large work pieces
- Tester stand with cabinet

MODULAR ROCKWELL SYSTEM CV-6500™

Especially designed for "On-Line" testing of large quantities during components production

- High quality hardness testing module especially designed to test large quantities of components during production
- The test head can easily be integrated in the production process due to its new design and slim build
- The system consists of a test head and a separate read out unit that can be installed in a switchboard cabinet
- Available in Rockwell-HRC, Brinell (up to 187.5kg) and Vickers. For the Brinell and Vickers versions a modified test procedure is applied measuring the indentation depth as the optical measuring method is not suitable for quick, automatic testing
- High accuracy plus quick testing guaranteed as the test load is checked and adapted during the entire load cycle
- The test cycle of 30 seconds starts automatically when the sample is ready positioned. Once the test cycle is finished, the system indicates that the sample can be withdrawn
- The test result is valued according to the indicated parameters
- The hardness value can be transferred through RS-232 or TCP/LAN



Technical specifications

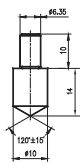
Hardness parameter	Rockwell C, other scales available on request
Test load (Rockwell)	10kp Preload, 150kp total load
Hardness Resolution	0.1 HRC unit
Stroke	15mm
Test cycle duration	Approx. 30 Seconds
Power supply	85 - 264V / AC
Dimensions	88mm x 88mm x 750mm + connection box on the side
Mounting options	Tapped holes on the back
Control unit	19"-housing, 3HE
Connection to SPS	Switches
Data output	RS232
Display	Graphic LCD

Further information available on request

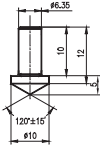
ROCKWELL TYPE HARDNESS TESTER CV-630™

Bench hardness tester with protruding nose for internal tests

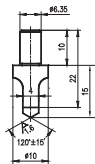
- Horizontally protruding nose type machine
- Tests on difficult to reach areas
- Tests on internal surfaces from 40mm diameter with standard indentor and 23mm with short indentor
- Tests on external surfaces down to 3mm diameter
- Automatic test cycle
- Clear matrix backlit LCD
- Data output to printer TA-220
- Easy menu selectable screens for display and control
- Four models of diamond indentors available:



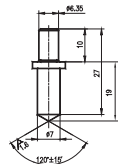
Standard



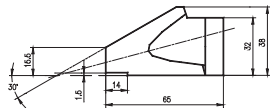
Short



Chisel



Slim



Dimensions of protruding nose



Rockwell load selector



Technical specifications

Hardness parameters	A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
Hardness resolution	0.1 of a Rockwell unit
Test loads	10kgf preload / 60, 100, 150kgf total load
Display	Matrix backlit LCD
Language	English
Data entry	Membrane keypad, menu driven
Test cycle	Automatic
Load duration	Programmable dwell and recovery times 2-50sec
Data output	RS232 serial port for printer TA-220/computer
Menu features	Hardness tolerance setting (upper/lower limits) Conversions: Vickers, Brinell, Rockwell superficial, Leeb, UTS Statistical data: X-bar, S, R, max, min Automatic curvature correction for cylindrical and spherical surfaces
Standard	EN-ISO 6508, ASTM E-18
Specimen accommodation	Vertical space 250mm (10") Horizontal space (from centre-line) 150mm (6")
Specimen access	External surfaces Cylindrical surfaces down to 3mm diameter Internal surfaces from 40mm diameter with standard indentor and 23mm with short indentor
Power supply	220V or 110V, 50Hz
Machine dimensions	Width 225mm, depth 715mm, height 790mm
Machine weight	100kg

Standard delivery

- Main unit
- Diamond indenter
- Ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Fixing screw for indentors
- Flat anvil 70mm diameter
- V-anvil 30mm diameter
- Hardness test block HRC
- Hardness test block HRB
- Power cable
- Certificate
- Manual

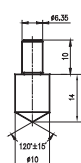
Optional accessories

- Short diamond indenter
- Chisel diamond indenter
- Slim diamond indenter
- Ball indenter 1/8"
- Ball indenter 1/4"
- Ball indenter 1/2"
- Flat anvil 225mm diameter
- Flat anvil 150mm diameter
- V-anvil large
- V-anvil flat
- Support fixtures
- Printer TA-220 with cable
- UKAS certified test blocks

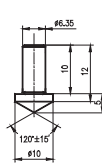
ROCKWELL TYPE HARDNESS TESTER CV-631™

Bench hardness tester with protruding nose for internal tests

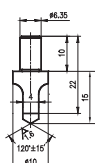
- Automatic load selector
- Horizontally protruding nose type machine
- Tests on difficult to reach areas
- Tests on internal surfaces from 40mm diameter with standard indenter and 23mm with short indenter
- Tests on external surfaces down to approx 3mm diameter (hardness dependant)
- Automatic test cycle
- Clear matrix backlit LCD
- Data output to printer TA-220
- Easy menu selectable screens for display and control
- Four models of diamond indentors available:



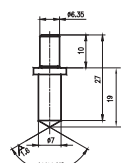
Standard



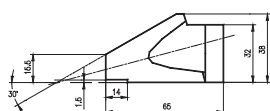
Short



Chisel



Slim



Dimensions of protruding nose



Technical specifications

Hardness parameters	A, B, C, D, E, F, G, H, K, L, M, P, R, S, V
Hardness resolution	0.1 of a Rockwell unit
Test loads	10kgf preload / 60, 100, 150kgf total load
Display	Matrix backlit LCD
Language	English
Data entry	Membrane keypad, menu driven
Test cycle	Automatic
Load duration	Programmable dwell and recovery times 2-50sec
Data output	USB, RS232 serial port for printer TA-220/computer
Menu features	Upper/lower hardness limits settings and alarm Data statistics: Ave., Max., Min., S.R. Scale conversion: converts tested value to Vickers, Leebs, Brinell, Rockwell superficial, UTS Curve correction: cylinder and sphere Test force switches automatically Automatic data storage within 500 data groups, Hardness & Strength conversion also for aluminum, alloy aluminum copper and alloy copper
Standard	EN-ISO 6508, ASTM E-18
Specimen accommodation	Vertical space 260mm (10.24") Horizontal space (from centre-line) 150mm (6")
Specimen access	External surfaces Cylindrical surfaces down to 3mm diameter Internal surfaces Cylindrical surfaces down to 23mm diameter
Power supply	220V or 110V, 50Hz
Machine dimensions	Width 225mm, depth 715mm, height 790mm
Machine weight	100kg

Standard delivery

- Main unit
- 120° Cone diamond indenter
- Ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Fixing screw for indentors
- Flat anvil 70mm diameter
- V-anvil 30mm diameter
- Test block HRA
- Test block HRB
- Test block HRC (3 pcs)
- Power cable
- Certificate
- Manual

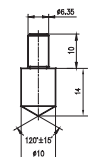
Optional accessories

- Short diamond indenter
- Chisel diamond indenter
- Slim diamond indenter
- Ball indenter 1/8"
- Ball indenter 1/4"
- Ball indenter 1/2"
- Flat anvil 225mm diameter
- Flat anvil 150mm diameter
- V-anvil large
- V-anvil flat
- Support fixtures
- Printer TA-220 with cable
- UKAS certified test blocks

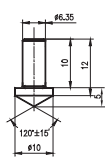
ROCKWELL TWIN TYPE HARDNESS TESTER CV-632™

Bench hardness tester with protruding nose for internal tests, regular and superficial scales

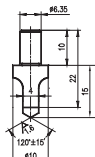
- Horizontally protruding nose type machine
- Tests on difficult to reach areas
- Tests on internal surfaces from 40mm diameter with standard indenter and 23mm with short indenter
- Tests on external surfaces down to approx 3mm diameter (hardness dependant)
- Automatic test cycle
- Clear matrix backlit LCD
- Data output to printer TA-220
- Easy menu selectable screens for display and control
- Four models of diamond indentors available:



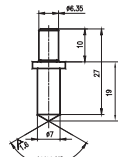
Standard



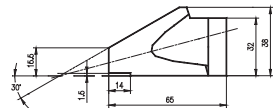
Short



Chisel



Slim



Dimensions of protruding nose



Rockwell & Rockwell Superficial load selector



Technical specifications

Hardness parameters	Rockwell A, B, C, D, E, F, G, H, K, L, M, P, R, S, V Rockwell Superficial N, T, W, X, Y
Hardness resolution	0.1 of a Rockwell unit
Test loads	10kgf preload / 60, 100, 150kgf total load 3kgf preload / 15, 30, 45kgf total load
Display	Matrix backlit LCD
Language	English
Data entry	Membrane keypad, menu driven
Test cycle	Automatic
Load duration	Programmable dwell and recovery times 2-50sec
Data output	RS232 serial port for printer TA-220/computer
Menu features	Hardness tolerance setting (upper/lower limits) Conversions: Vickers, Brinell, Rockwell superficial, Knoop, Leeb, UTS Statistical data : X-bar, S, R, max, min Automatic curvature correction for cylindrical and spherical surfaces
Standard	EN-ISO 6508, ASTM E-18
Specimen accommodation	Vertical space 250mm (10") Horizontal space (from centre-line) 150mm (6")
Specimen access	External surfaces Cylindrical surfaces down to 3mm diameter Internal surfaces from 40mm diameter with standard indenter and 23mm with short indenter
Power supply	220V or 110V, 50Hz
Machine dimensions	Width 240mm, depth 720mm, height 815mm
Machine weight	120kg

Standard delivery

- Main unit
- Diamond indenter
- Ball indenter 1/16"
- Spare balls 1/16" (5 pcs)
- Fixing screw for indentors
- Flat anvil 70mm diameter
- V-anvil 30mm diameter
- Hardness test block HRA
- Hardness test block HRB
- Hardness test block HRC
- Hardness test block HR15N
- Hardness test block HR30N (2 pcs)
- Hardness test block HR30T
- Power cable
- Certificate and manual

Optional accessories

- Short diamond indenter
- Chisel diamond indenter
- Slim diamond indenter
- Ball indenter 1/8"
- Ball indenter 1/4"
- Ball indenter 1/2"
- Flat anvil 225mm diameter
- Flat anvil 150mm diameter
- V-anvil large
- V-anvil flat
- Support fixtures
- Printer TA-220 with cable
- UKAS certified test blocks

ROCKWELL® HARDNESS SCALES™

Scales, loads, indentors and applications

Regular Rockwell scales

Preliminary test force: 98.07N (10kgf)

Scale	Indentor	Test force		Applications
A	Diamond	588,4N	(60kgf)	Case hardened steel, cemented carbide, thin steel sheet, copper
D	Diamond	980,7N	(100kgf)	Case hardened steel, cemented carbide, thin steel sheet, copper
C	Diamond	1471N	(150kgf)	Case hardened steel, cemented carbide, thin steel sheet, copper
F	Steel ball diameter 1/16"	588,4N	(60kgf)	Annealed steel, bearing metal, hard-drawn aluminium alloys, brass, beryllium copper, phosphor bronze
B	Steel ball diameter 1/16"	980,7N	(100kgf)	Annealed steel, bearing metal, hard-drawn aluminium alloys, brass, beryllium copper, phosphor bronze
G	Steel ball diameter 1/16"	1471N	(150kgf)	Annealed steel, bearing metal, hard-drawn aluminium alloys, brass, beryllium copper, phosphor bronze
H	Steel ball diameter 1/8"	588,4N	(60kgf)	Bearing metal, grinding stone
E	Steel ball diameter 1/8"	980,7N	(100kgf)	Bearing metal, grinding stone
K	Steel ball diameter 1/8"	1471N	(150kgf)	Bearing metal, grinding stone
P	Steel ball diameter 1/4"	588,4N	(60kgf)	Extra mild metal (e.g. aluminum, zinc, lead)
M	Steel ball diameter 1/4"	980,7N	(100kgf)	Extra mild metal (e.g. aluminum, zinc, lead)
L	Steel ball diameter 1/4"	1471N	(150kgf)	Extra mild metal (e.g. aluminum, zinc, lead)
R	Steel ball diameter 1/2"	588,4N	(60kgf)	Tin, plastics, cardboard
S	Steel ball diameter 1/2"	980,7N	(100kgf)	Tin, plastics, cardboard
V	Steel ball diameter 1/2"	1471N	(150kgf)	Tin, plastics, cardboard

Superficial Rockwell scales

Preliminary test force: 29.4N (3kgf)

Scale	Indentor	Test force		Applications
HR15N	Diamond 120°	147 N	(15kgf)	Nitrided steel, thin steel plate, tubes and pipes, knife blades, small parts
HR30N	Diamond 120°	294 N	(30kgf)	Nitrided steel, thin steel plate, tubes and pipes, knife blades, small parts
HR45N	Diamond 120°	441N	(45kgf)	Nitrided steel, thin steel plate, tubes and pipes, knife blades, small parts
HR15T	Steel ball diameter 1/16"	147 N	(15kgf)	Soft steel, brass, bronze, tubes and pipes, aluminium alloy
HR30T	Steel ball diameter 1/16"	294 N	(30kgf)	Soft steel, brass, bronze, tubes and pipes, aluminium alloy
HR45T	Steel ball diameter 1/16"	441N	(45kgf)	Soft steel, brass, bronze, tubes and pipes, aluminium alloy
HR15W	Steel ball diameter 1/8"	147 N	(15kgf)	Soft steel, bismuth bronze
HR30W	Steel ball diameter 1/8"	294 N	(30kgf)	Soft steel, bismuth bronze
HR45W	Steel ball diameter 1/8"	441N	(45kgf)	Soft steel, bismuth bronze
HR15X	Steel ball diameter 1/4"	147 N	(15kgf)	Soft metal, plastics, etc.
HR30X	Steel ball diameter 1/4"	294 N	(30kgf)	Soft metal, plastics, etc.
HR45X	Steel ball diameter 1/4"	441N	(45kgf)	Soft metal, plastics, etc.
HR15Y	Steel ball diameter 1/2"	147 N	(15kgf)	Soft metal, plastics, etc.
HR30Y	Steel ball diameter 1/2"	294 N	(30kgf)	Soft metal, plastics, etc.
HR45Y	Steel ball diameter 1/2"	441N	(45kgf)	Soft metal, plastics, etc.

MICRO-VICKERS HARDNESS TESTER CV-400AAT™

Motorized turret with analogue measurement microscope and easy-to-use integrated hardness calculator

- Motorized turret
- High quality microscope with analogue scale
- Fully automatic load control
- Easy-to-use operating system
- Two optical paths
- Built-in high speed thermal printer
- XY stage with minimum reading of 0.01mm
- CV-CCD Video measurement system optional
- Dual indenter (Vickers/Knoop) turret optional
- 2kg load optional

Typical applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers



Technical specifications

Vickers scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 (HV2)
Display	Shows: hardness readings through calculator input, general settings, diagonals, dwell time, RS-232 connections, illumination settings
Test load	10 - 25 - 50 - 100 - 200 - 300 - 500 - 1000gf (2000gf optional)
Accuracy	Conforms to EN-ISO 6507 and ASTM E384
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Test force selection	By dial knob; applied load shows on display
Microscope	
Objectives	10x, 40x
Eyepiece magnification	15x / mechanical thumbwheel
Total magnification	150x (observation), 600x (measurement)
Measuring range	200µm
Resolution	0.03µm
XY stage	
Dimensions	100mm x 100mm
Travel range	25mm x 25mm
Resolution	0.01mm (micrometers)
Specimen	
Maximum height	85mm (2.55")
Maximum depth	90mm (3.35") (from the centre)
Optical path	2-way switchable
Power supply	110-220V, 50Hz
Dimensions	470mm x 210mm x 420mm
Weight	36kg

Standard delivery

- Main unit
- Motorized turret
- Diamond indenter Vickers
- Objectives 10x, 40x
- Eyepiece 15x
- XY-stage with micrometers
- Adjustable feet (3pcs)
- Clamping devices (3pcs)
- Extension tube for CCD-camera
- Analogue eyepiece incl. protection cover
- Spirit level
- Micro-Vickers test plates (2pcs)
- Spare light bulb 12V-30W
- Spare fuses (2pcs)
- Installation and user manual
- CV Instruments certificate

Optional accessories

- 2kg test load / scales
- Knoop indenter
- Precision vice
- Video filar system
- Certified indentors and test blocks

Optional system

- CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

MICRO-VICKERS HARDNESS TESTER CV-400DAT™

Motorized turret with digital measurement microscope, menu operated user interface

- Motorized turret
- High quality digital microscope for efficient operation
- Fully automatic load control
- Easy operating system
- Two optical paths
- Built-in high speed thermal printer
- XY stage with minimum reading of 0.01mm
- CV-CCD Video measurement system optional
- Dual indenter (Vickers/Knoop) turret optional
- 2kg load optional

Typical applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers



Technical specifications

Vickers scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 (HV2)
Display	Dwell time (sec), hardness value, menu operated user interface, shows: hardness readings, general settings, diagonals, dwell time, RS-232 connections, illumination settings
Test load	10 - 25 - 50 - 100 - 200 - 300 - 500 - 1000gf (2000gf optional)
Accuracy	Conforms to EN-ISO 6507 and ASTM E384
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Test force selection	By dial knob; applied load shows on display
Microscope	
Objectives	10x, 40x
Eyepiece magnification	15x / mechanical thumbwheel, digital encoder built-in
Total magnification	150x (observation), 600x (measurement)
Measuring range	200µm
Resolution	0.03µm
XY stage	
Dimensions	100mm x 100mm
Travel range	25mm x 25mm
Resolution	0.01mm (micrometers)
Specimen	
Maximum height	85mm (2.55")
Maximum depth	90mm (3.35") (from the centre)
Optical path	2-way switchable
Power supply	110-220V, 50Hz
Dimensions	470mm x 210mm x 420mm
Weight	36kg

Standard delivery

- Main unit
- Motorized turret
- Diamond indenter Vickers
- Objectives 10x, 40x
- Digital eyepiece 15x
- XY-stage with micrometers
- Adjustable feet (3pcs)
- Clamping devices (3pcs)
- Extension tube for CCD-camera
- Digital eyepiece incl. protection cover
- Spirit level
- Micro-Vickers test plates (2pcs)
- Spare light bulb 12V-30W
- Spare fuses (2pcs)
- Installation and user manual
- CV Instruments certificate

Optional accessories

- 2kg test load / scales
- Knoop indenter
- Precision vice
- Video filar system
- Certified indentors and test blocks

Optional system

- CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

MICRO-VICKERS HARDNESS TESTER CV-400DTS™

Motorized turret with digital measuring microscope, touch screen user interface

- Motorized turret
- High quality digital microscope for efficient operation
- Fully automatic load control
- Easy to use operating system
- Case depth measurement with graphical display
- Two optical paths
- Built-in high speed thermal printer
- XY stage with minimum reading of 0.01mm
- CV-CCD Video measurement system optional
- Dual indenter (Vickers/Knoop) turret optional
- 2kg load optional

Typical applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers



TOUCH SCREEN

Technical specifications

Vickers scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 (HV2)
Display	Dwell time (sec), hardness value, menu operated user interface, shows: hardness readings, general settings, diagonals, dwell time, case depth analysis, RS-232 connections, illumination settings
Test load	10 - 25 - 50 - 100 - 200 - 300 - 500 - 1000gf (2000gf optional)
Accuracy	Conforms to EN-ISO 6507 and ASTM E384
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Test force selection	By dial knob; applied load shows on display
Microscope	
Objectives	10x, 40x
Eyepiece magnification	15x / mechanical thumbwheel, digital encoder built-in
Total magnification	150x (observation), 600x (measurement)
Measuring range	200µm
Resolution	0.03µm
XY stage	
Dimensions	100mm x 100mm
Travel range	25mm x 25mm
Resolution	0.01mm (micrometers)
Specimen	
Maximum height	85mm (2.55")
Maximum depth	90mm (3.35") (from the centre)
Optical path	2-way switchable
Power supply	110-220V, 50Hz
Dimensions	470mm x 210mm x 420mm
Weight	36kg

Standard delivery

- Main unit
- Motorized turret
- Diamond indenter Vickers
- Objectives 10x, 40x
- Eyepiece 15x
- XY-stage with micrometers
- Adjustable feet (3pcs)
- Clamping devices (3pcs)
- Extension tube for CCD-camera
- Digital eyepiece incl. protection cover
- Spirit level
- Micro-Vickers test plates (2pcs)
- Spare light bulb 12V-30W
- Spare fuses (2pcs)
- Installation and user manual
- CV Instruments certificate

Optional accessories

- 2kg test load / scales
- Knoop indenter
- Precision vice
- Certified indentors and test blocks

Optional system

- CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

MICRO-VICKERS HARDNESS SYSTEM CV-400DM™

Motorized turret, digital measuring microscope with external ccd monitor system

- "Easy measure" monitor system
- Motorized turret
- High quality digital microscope
- Fully automatic load control
- Easy to use operating system
- Two optical paths
- Built-in high speed thermal printer
- XY stage with minimum reading of 0.01mm
- Dual indenter (Vickers/Knoop) turret optional
- 2kg load optional

Typical applications

- Steels, nonferrous metals, IC wafers, small precision components
- Thin plastic, metallic foils, plating, coating, surface layers, laminated metals
- Effect of heat treatment, case depth analysis, depth of carburised and flame hardened layers



Technical specifications

Vickers scales	HV0.01, HV0.025, HV0.05, HV0.1, HV0.2, HV0.3, HV0.5, HV1 (HV2)
Display	Dwell time (sec), hardness value, menu operated user interface, shows: hardness readings, general settings, diagonals, RS-232 connections, illumination settings. CCD camera on eyepiece projects indentation on standard accessory CRT screen, allowing easy to read and more accurate measurement
Test load	10 - 25 - 50 - 100 - 200 - 300 - 500 - 1000gf (2000gf optional)
Accuracy	Conforms to EN-ISO 6507 and ASTM E384
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Test force selection	By dial knob; applied load shows on display
Microscope	
Objectives	10x, 40x
Eyepiece magnification	15x / mechanical thumbwheel, digital encoder built-in
Total magnification	150x (observation), 600x (measurement)
Measuring range	200µm
Resolution	0.03µm
XY stage	
Dimensions	100mm x 100mm
Travel range	25mm x 25mm
Resolution	0.01mm (micrometers)
Specimen	
Maximum height	85mm (2.55")
Maximum depth	90mm (3.35") (from the centre)
Optical path	2-way switchable
Power supply	110-220V, 50Hz
Dimensions	470mm x 210mm x 420mm
Weight	36kg

Standard delivery

- Main unit with CCD Camera and monitor
- Motorized turret
- Diamond indenter Vickers
- Objectives 10x, 40x
- Eyepiece 15x
- XY-stage with micrometers
- Adjustable feet (3pcs)
- Clamping devices (3pcs)
- Extension tube for CCD-camera
- Digital eyepiece incl. protection cover
- Spirit level
- Micro-Vickers test plates (2pcs)
- Spare light bulb 12V-30W
- Spare fuses (2pcs)
- Installation and user manual
- CV Instruments certificate

Optional accessories

- 2kg test load / scales
- Knoop indenter
- Precision vice
- Certified indentors and test blocks

Optional system

- CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

VICKERS/MICRO-VICKERS VIDEO FILAR SYSTEM CV-CCD™

Fast and easy determination of Vickers/Micro-Vickers hardness on PC, featuring hardness depth graphics



CV-CCD system

Unique, user friendly system combines the power, speed and flexibility of a personal computer with the precision of our Vickers/Micro-Vickers hardness testers series, to accommodate a full spectrum of micro hardness testing requirements.

Simple test procedure, user defines simple or complex pattern for automatic positioning and indentation. The software automatically measures and records indentation size and hardness measurement. Results display includes depth versus hardness XY plotting as well as statistics and individual indent results.

Ideal for industrial, production, and research applications. Measurements are made through the high-resolution video camera system. Productivity is dramatically increased due to the elimination of time consuming, stage and eyepiece manual intervention, typically associated with high quantity pattern testing.

Standard delivery

- Different configurations available depending on specific requirements. Please contact our sales department for advice.

VICKERS/MICRO-VICKERS VIDEO FILAR SYSTEM CV-CCD™

Fast and easy determination of Vickers/Micro-Vickers hardness on PC, featuring hardness depth graphics

CV-CCD1, Video filar system 1 Basic system for individual tests with PC

Standard delivery

- Software level 1
- Frame grabber card
- Micrometer
- CCD-camera 1/2" pal, C-mount
- Cable-camera with frame grabber, UIB
- Camera adapter direct
- Camera power supply 12V
- Applicable on our models:
CV-400AAT, CV-400DAT, CV-400DTS, CV405AAT, CV410AAT,
CV430AAT, CV450AAT, CV405DAT, CV410DAT, CV430DAT, CV450DAT

Option:

Automatic positioning and indentation

Languages available:

English, French, German, Spanish, Italian, Swedish, Portuguese, Polish, Czech, Hungarian

Excluding:

PC, monitor, keyboard, mouse and hardness tester
Minimum PC configuration:
Pentium IV, 2GHz, 256MB, 2PSI-slot, 2 USB, 2 RS-232, Grafic card (ATI-Radeon or Intel 745), CD-rom, Hard disk

CV-CCD2, Video filar system 2 Basic system for testing traverses with PC

Standard delivery

- Software level 1
- Frame grabber card
- CCD-camera 1/2" pal, C-mount
- Digital micrometer (1)
- Cable-camera with frame grabber, UIB
- Camera adapter hardness tester
- Camera power supply 12V
- Micrometer clamp
- Cable PC SER-hardness tester
- Applicable on our models:
CV-400AAT, CV-400DAT, CV-400DTS, CV405AAT, CV410AAT,
CV430AAT, CV450AAT, CV405DAT, CV410DAT, CV430DAT, CV450DAT

Option:

Automatic positioning and indentation

Languages available:

English, French, German, Spanish, Italian, Swedish, Portuguese, Polish, Czech, Hungarian

Excluding:

PC, monitor, keyboard, mouse and hardness tester
Minimum PC configuration:
Pentium IV, 2GHz, 256MB, 2PSI-slot, 2 USB, 2 RS-232, Grafic card (ATI-Radeon or Intel 745), CD-rom, Hard disk

CV-CCD3, Video filar system 3 Semi-automatic configuration with PC

Standard delivery

- Software level 2
- X-Y table 100mm x 100mm or 160mm x 100mm
- FM stepper box 2-AXIS
- Frame grabber card
- CCD-camera 1/2" pal, C-mount
- Cable-camera with frame grabber, UIB
- Table adapter
- Camera adapter direct
- Camera power supply 12V
- Cable PC SER-hardness tester
- Cable PC SER-FM stepper box
- Applicable on our models:
CV-400AAT, CV-400DAT, CV-400DTS, CV405AAT, CV410AAT,
CV430AAT, CV450AAT, CV405DAT, CV410DAT, CV430DAT, CV450DAT

Option:

Automatic positioning and indentation

Languages available:

English, French, German, Spanish, Italian, Swedish, Portuguese, Polish, Czech, Hungarian

Excluding:

PC, monitor, keyboard, mouse and hardness tester
Minimum PC configuration:
Pentium IV, 2GHz, 256MB, 2PSI-slot, 2 USB, 2 RS-232, Grafic card (ATI-Radeon or Intel 745), CD-rom, Hard disk

CV-CCD4, Video filar system 4 Full-automatic system for testing complex patterns and traverses with PC

Standard delivery

- Software fully automatic
- X-Y table 100mm x 100mm or 160mm x 100mm
- FM stepper 3-AXIS
- Z-axis installation kit
- Frame grabber card
- CCD-camera 1/2" pal, C-mount
- Cable-camera with frame grabber, UIB
- Table adapter
- Camera adapter hardness tester
- Camera power supply 12V
- Cable PC SER-hardness tester
- Cable PC SER-FM stepper box
- Applicable on our models:
CV-400AAT, CV-400DAT, CV-400DTS, CV405AAT, CV410AAT,
CV430AAT, CV450AAT, CV405DAT, CV410DAT, CV430DAT, CV450DAT

Languages available:

English, French, German, Spanish, Italian, Swedish, Portuguese, Polish, Czech, Hungarian

Excluding:

PC, monitor, keyboard, mouse and hardness tester
Minimum PC configuration:
Pentium IV, 2GHz, 256MB, 2PSI-slot, 2 USB, 2 RS-232, Grafic card (ATI-Radeon or Intel 745), CD-rom, Hard disk

VICKERS HARDNESS TESTER CV-405/410/430/450AAT™

With analogue measurement micrometer reading and easy-to-use integrated hardness calculator

- High precision, high accuracy Vickers hardness tester
- High quality microscope with analogue scale
- Standard conforms to EN-ISO 6507
- Integrated hardness calculator
- Robust and reliable
- Four models with different weight ranges available
- Two way optical path
- Superior Optical system and illumination
- CV-CCD Video measurement system optional

Typical applications

- Cemented carbide, ceramics, steels, nonferrous metals
- Thin plates, metallic foils, plating, miniature objects
- Material strength, effect of heat treatment, depth of carburized or decarburized layer and flame hardened layer, effect of hardening, hardness resulting from welding or deposition
- Routine testing of precision components
- Research and development



Technical specifications

Vickers scales	CV-405AAT: HV0.3, HV0.5, HV1, HV2, HV3, HV5 CV-410AAT: HV0.5, HV1, HV2, HV3, HV5, HV10 CV-430AAT: HV1, HV2.5, HV5, HV10, HV20, HV30 CV-450AAT: HV1, HV5, HV10, HV20, HV30, HV50
Test force selection	By dial knob; applied load shown on display
Accuracy	Conforms to EN-ISO 6507
Test load	CV-405AAT: 0.3, 0.5, 1, 2, 3, 5 CV-410AAT: 0.5, 1, 2, 3, 5, 10 CV-430AAT: 1, 2.5, 5, 10, 20, 30 CV-450AAT: 1, 5, 10, 20, 30, 50
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Objectives	10x, 20x (CV-405/410AAT), 5x, 10x (CV-430/450AAT)
Eyepiece magnification	15x
Total magnification	150x, 300x (CV-405/410AAT), 75x, 150x (CV-430/450AAT)
Measuring range	HV5 - HV3000
Maximum specimen height	160mm
Maximum specimen depth	135mm from the centre
Optical path	2-way switchable: eyepiece/camera
Display	Dwell time (sec), hardness value (from entering diagonal lengths via digital calculator)
Power supply	220V, 50Hz
Dimensions	220mm x 540mm x 650mm
Weight	38kg

Standard delivery

- Main unit
- Diamond indenter Vickers
- Objectives 10x, 20x or 5x, 10x
- Digital eyepiece 15x
- Flat anvil \varnothing 60mm
- 4 adjustable feet
- Level gauge
- Integrated hardness calculator on display
- Vickers test plate
- Spare halogen lamp
- Installation & users manual
- CV Instruments certificate

Optional accessories

- Precision vice
- XY-stage with micrometers
- Certified indentors
- Certified test blocks
- See pages indentors and test blocks

Optional system

- CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

VICKERS HARDNESS TESTER CV-405/410/430/450DAT™

With digital measurement microscope, large LCD display featuring statistics, limits checking and scale conversions

- Digital Vickers hardness tester
- Large LCD screen, menu operated
- Conversion to other hardness scales: Rockwell
- Standard conforms to EN-ISO 6507
- Integrated high-speed thermal printer and RS232 data output
- Four models with different weight ranges available
- Two way optical path
- Superior Optical system and illumination
- CV-CCD Video measurement system optional

Typical applications

- Cemented carbide, ceramics, steels, nonferrous metals
- Thin plates, metallic foils, plating, miniature objects
- Material strength, effect of heat treatment, depth of carburized or decarburized layer and flame hardened layer, effect of hardening, hardness resulting from welding or deposition
- Routine testing of precision components
- Research and development



Technical specifications

Vickers scales	CV-405DAT: HV0.3, HV0.5, HV1, HV2, HV3, HV5 CV-410DAT: HV0.5, HV1, HV2, HV3, HV5, HV10 CV-430DAT: HV1, HV2.5, HV5, HV10, HV20, HV30 CV-450DAT: HV1, HV5, HV10, HV20, HV30, HV50
Display conversion to	Rockwell
Test force selection	Dial
Accuracy	Conforms to EN-ISO 6507
Test load	CV-405DAT: 0.3, 0.5, 1, 2, 3, 5 CV-410DAT: 0.5, 1, 2, 3, 5, 10 CV-430DAT: 1, 2.5, 5, 10, 20, 30 CV-450DAT: 1, 5, 10, 20, 30, 50
Load control	Automatic (loading/dwell/unloading)
Load duration	5 to 60 sec (5 sec increments)
Objectives	10x, 20x (CV-405/CV-410DAT), 5x, 10x (CV-430/450DAT)
Eyepiece magnification	15x with digital encoder
Total magnification	150x, 300x (CV-405/CV-410DAT), 75x, 150x (CV-430/450DAT)
Measuring range	HV5 - HV3000
Maximum specimen height	160mm
Maximum specimen depth	135mm from the centre line
Display	Menu operated keypad with large LCD-screen
Hardness value	5-digit
Diagonal length	4-digit (D1, D2)
Load duration	Dwell time (sec)
Conversion	Rockwell
Statistics	No., average, S. dev., R
Optical path	2-way switchable : eyepiece/camera
Power supply	220V, 50Hz
Dimensions	220mm x 540mm x 650mm
Weight	38kg

Standard delivery

- Main unit
- Diamond indenter Vickers
- Objectives 10x, 20x or 5x, 10x
- Digital eyepiece 15x
- Flat anvil \varnothing 60mm
- Built-in printer
- RS232 data output
- 4 adjustable feet
- Level gauge
- Vickers test plate
- Spare halogen lamp
- Fuse
- Installation & users manual
- CV Instruments certificate

Optional accessories

- Precision vice
- XY-stage with micrometers
- Certified indentors
- Certified test blocks
- See pages indentors and test blocks

Optional system

- CV-CCD system for (semi-) and automatic traverses, pattern testing through pc support and motorised XY stage

UNIVERSAL HARDNESS TESTER CV-700™

Analogue, universal hardness tester for reliable Rockwell, Brinell and Vickers testing

- Dead-weight universal hardness tester with solid design
- Rockwell, Brinell and Vickers testing procedures combined
- Moving table between indenter and measuring microscope
- Magnification by objective lenses 37.5x and 70x
- Conforms to DIN-EN-ISO 6506, 6507, 6508 and ASTM
- Simple test cycle by operation lever
- Wide test load range up to 187.5kgf
- Elevating spindle with precision guide bush, high precision bearings to eliminate back-lash from the system



Technical specifications

Hardness parameters	Rockwell, Brinell, Vickers	
Optics	Eyepiece magnification 15x	
Objectives	Interchangeable 37.5x and 70x magnification	
Standards	Conforms to DIN-EN-ISO 6506, 6507, 6508 and ASTM	
Test loads	6 Test Loads Selectable	
Test load type	Dead weights, load step adjustable	
Test cycle	Operation lever system	
Test loads	Rockwell	60 - 100 - 150kg
	Brinell	31.25 - 62.5 - 187.5kg
	Vickers	30 - 100kg
Indenter types optional	Rockwell	Diamond cone 120°, Balls 1/16"
	Brinell	Balls 2.5 - 5mm
	Vickers	Diamond cone 136°
Load duration	Conforms to standards	
Data output	Non	
Specimen accommodation	Maximum test height 180mm, maximum depth 200mm (from the centre)	
Specimen access	External surfaces, Cylindrical surfaces down to 3mm diameter	
Power supply	220V / 50Hz	
Machine dimensions	Width 560mm, depth 260mm, height 760mm	
Machine net weight	90kg	

Standard delivery

- Main unit
- 37.5x and 70x objective
- Test table
- Test platform \varnothing 60mm
- V-anvil \varnothing 40mm and \varnothing 60mm
- Flat anvil \varnothing 60mm
- Hardness test block \pm 450HV
- Hardness test block \pm 200HB
- Hardness test block \pm 60HRC
- Hardness test block \pm 30HRC
- Hardness test block \pm 85HRB
- Fuse 7A (2 pcs)
- Spare light bulb 6V/15W (2 pcs)
- External lamp for Brinell measurements
- Power cable
- CV Instruments certificate
- Installation and user manual

Optional accessories

- Certified indentors



Instruments



HARDNESS TESTERS - DUROMETERS - **SURFACE ROUGHNESS TESTERS**
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

visit www.cvinstruments.com

BRINELL HARDNESS TESTER CV-3000LDB™

Ready-to-test digital Brinell tester with closed loop controlled load application

- Sturdy, regular 30 kN (3000kg) Brinell tester
- Rugged construction to with-stand the harshest environments
- Accurate reliable and durable tester at a very affordable price
- High rigidity and closed loop load technology to ensure accurate and safe load application
- External microscope with analogue scale for indentation measurement
- Easy to use human interface to set up and operate the tester
- Brinell video microscope system optional



Technical specifications

Brinell scales	HBW 10/3000, HBW 10/1500, HBW 10/1000, HBW 10/500, HBW 10/250, HBW 10/125, HBW 10/100, HBW 5/750, HBW 5/250, HBW 5/62.5, HBW 2.5/187.5
Hardness resolution	0.1 unit if HB < 100 else 1.0 unit
Test loads	62.5, 100, 187.5, 250, 500, 750, 1000, 1500, 3000kgf
LCD display indication	Test force selected, test force actual, dwell Time
Test force application	Closed loop controlled load motor
Load duration	Adjustable application and dwell time 5-60 sec (5 sec step)
Accuracy	Conforms to EN-ISO 6506
Specimen accommodation	Vertical space 220mm Horizontal space (from centre-line) 135mm
Specimen access	External surfaces roughly ground, Ra <21.6µm
Power supply	220V AC, 50 Hz
Measuring microscope	Magnification 20X, resolution 5µm
Machine dimensions	Width 236mm, depth 550mm, height 753mm
Machine weight	Approx. 123kg

Standard delivery

- CV-3000LDB main unit
- Measuring microscope 20x
- Ball indentors
ø 2.5mm, ø 5mm and ø 10mm
- V-anvil
- Large flat anvil
- Small flat anvil
- Test table ø 80mm
- Fuse 2A (3 pcs)
- Test block 150-250 HBW 10/3000
- Test block 75-125 HBW 10/1000
- Test block 150-250 HBW 2.5/187.5
- CV Instruments certificate
- Installation and user manual

Optional accessories

- Spare balls for each indenter
- Brinell video microscope system
(see following page)

***Also available with Brinell scanning system CV-HB100**

See following page!

BRINELL SCANNING SYSTEM CV-HB100

Portable Brinell video scanning system



**Unique
CV Instruments system**

- High end portable video scanning system to automatically measure and determine the Brinell hardness value
- Excellent solution for quick and easy measurement of Brinell hardness values with ball diameters 1, 2, 2.5, 5 and 10mm and applied loads of 1 to 3000kg
- Including magnetic base for accurate and precise measuring
- Easy to use: Position the scanning system on the indentation made in a flat or curved surface, take an image of the indentation and send the image to pc or laptop to determine the relative hardness and diameter of the indentation. Accuracy of the measured diameter is up to 0.001 μ m
- Possibility to set tolerance value Yes/No
- Possibility to show the last 5 hardness measurements taken
- Automatic storage of images and files
- Storage of operator id, date/hour, hardness parameters, measured hardness values, location of stored image
- Software for automatic measurement can be used for numerous other applications with different video cameras

See following page for more details!

BRINELL SCANNING SYSTEM CV-HB100

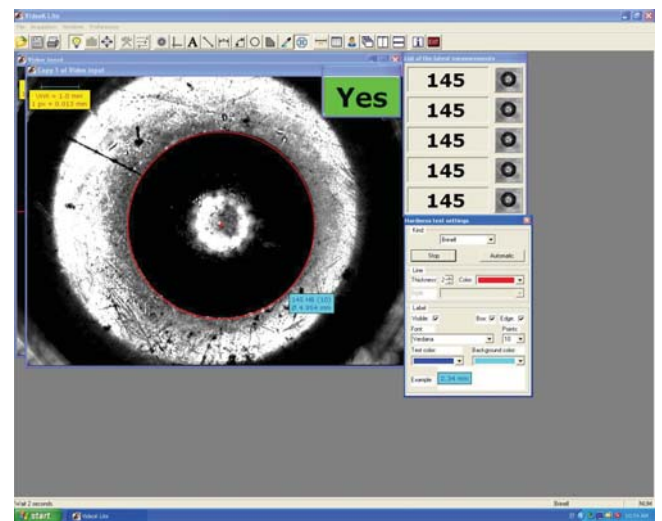
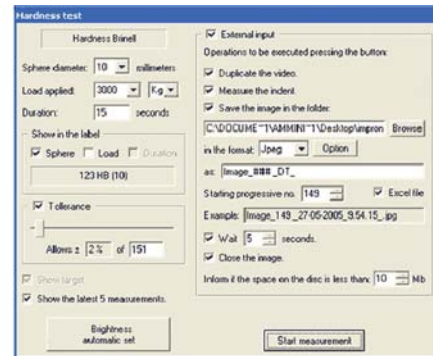
Portable Brinell video scanning system

Software features

- Measures the indentation automatically or by hand
- Saves the image of the indentation in a dedicated format and folder
- Test results can be imported into Excel
- Each measurement is filed with information about the ball diameter, applied load, load duration
- 5 last measurements can be shown on screen
- Images taken can be copied
- Automatic warning if disk space is insufficient to store image

PC requirements

- Processor: Intel Pentium or equivalent 1GHz
- Operating system: Windows 2000 or Windows XP
- Browser: Internet Explorer 5.5 (or higher)
- Memory: 512Mb RAM
- Minimum disk space: 4Mb
- Video card: 32Mb
- Firewire port



Technical specifications

Power supply	12V
Power consumption	300mA
Dimensions	∅ 43mm x 270mm
Dimensions carrying case	Ext. 380mm x 265mm x150mm Int. 350mm x 250mm x140mm
Weight	650gr

Standard delivery

- Video-optical head
- Firewire interface for pc or laptop
- Software
- Power supply AC 100-240V-50/60Hz, 1.0A
- Frame grabber
- Video cable (2.3m)
- RCA-RCA video cable (1.5m)
- 12V power cable (0.85m)
- Set of USB cable, CD with driver & dongle

Optional accessories

- Battery charger 12V, 7A
- Battery charger 12V, 1.2A
- Aluminium carrying case for CV-HB100 + battery only
- PC or laptop

HARDNESS REFERENCE BLOCKS ALL SCALES

With official calibration certificates UKAS, DKD or ASTM

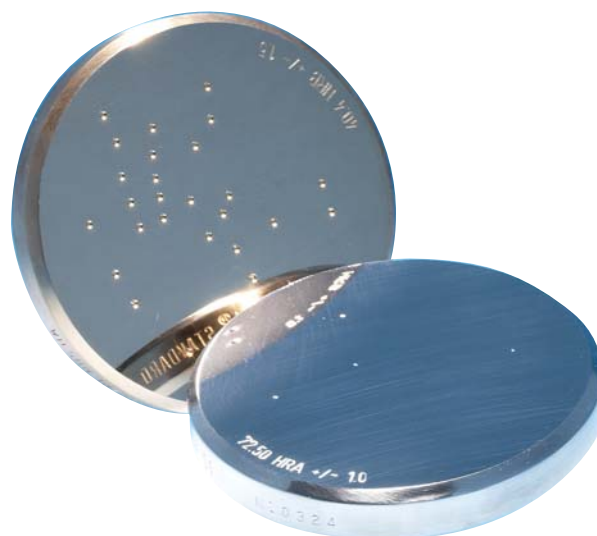
CV Instruments hardness reference blocks are used for annual verification and calibration of hardness testing machines, as well as for periodical check and sometimes for overtaking of hardness scales on a hardness testing machine. That's why hardness reference blocks are a necessary help of industrial Quality Management. Only the use of high quality, precise hardness reference blocks calibrated to applicable standards can ensure the functionality and relative reliability and accuracy of measurement of a hardness testing machine.

The hardness reference blocks used for indirect verification should conform largely to the workpiece to be tested, in terms of material characteristics and hardness range. For this reason a hardness reference block made of aluminium was developed for the lower hardness range which can not be covered by steel, using new materials technology methods.

When using hardness reference blocks it is irrelevant whether the value of the nominal hardness to be delivered corresponds exactly to the actual calibration value observed, since scale adaptation should be carried out with at least two hardness values.

A hardness reference block shall only be used as according to the standards to that method and test condition for which it was calibrated.

CV Instruments certified hardness reference blocks are available as follows and all conform to the international standards as mentioned above.



All CV Instruments hardness reference block certificates are based on following international standards:

Brinell	DIN-EN-ISO 6506-3	ASTM E 10
Vickers	DIN-EN-ISO 6507-3	ASTM E 92 / E 384
Rockwell	DIN-EN-ISO 6508-3	ASTM E 18
Knoop	ISO 4545-3	ASTM E 384
Rockwell carbide	DIN 30999	ISO 3738
Martens hardness	DIN 50359	ISO DIS 14577

CV Instruments certified hardness reference blocks are available as follows and all conform to the international standards as mentioned above.

Scale	UKAS	DKD	DKD/MPA	ASTM	CV
Regular Rockwell (all scales)	■	■	■	■	■
Superficial Rockwell (all scales)	■	■	■	■	■
Brinell (all scales)	■	■	■	□	■
Macro Vickers (all scales)	■	■	■	■	■
Micro Vickers (all scales)	■	■	■	■	■
Knoop	■	■	■	■	□
Martens hardness	■	■	■	■	□

Order your blocks based on nominal values.

Please ask for our separate product list of nominal hardness values available per hardness scale and type of certificate.

Hardness reference "soft" blocks made of aluminium

These CV Instruments reference blocks are available with DKD/MPA certificate only.

For several years there has been a need for "soft" blocks.

Using new materials technology methods, it is now possible to produce blocks made of aluminium.

They are available in lower nominal values in Rockwell, Brinell and Vickers scales. Ask for our separate sales list.

INDENTORS FOR ALL HARDNESS SCALES

With official calibration certificates UKAS, DKD or ASTM

CV Instruments offers a wide range of indentors. All certified indentors will be issued with a certificate traceable to internationally recognised standards such as UKAS, DKD or ASTM. We also offer low cost factory certified indentors and specials (see below).

Specials

CV Instruments also offer special adapters for indentors to enlarge the field of application. Small gooseneck adapters are available in three sizes to permit regular or superficial Rockwell hardness testers to perform internal tests on rings, tubes and annular parts where the inside diameter, plus the wall thickness, is less than 50.8mm or 2 inches. These adapters will fit any of the standard Rockwell hardness testers. The gooseneck adaptor can be clamped into the bottom of the plunger rod (in the same manner as an indentor) and is not heavy enough to affect a reading due to increasing the applied load. The minimum internal diameter which can be tested is 11.5mm or 7/16 inch.

Ask for our separate product list of indentors.



Indentor type CV Instruments

Scale	UKAS	DKD	ASTM	CV
Rockwell type 120° diamond cone	■	■	■	■
Rockwell ball indentors	■	■	■	■
Steel Rockwell ball indentor - 1/16" dia.				
Steel Rockwell ball indentor - 1/8" dia.				
Steel Rockwell ball indentor - 1/4" dia.				
Steel Rockwell ball indentor - 1/2" dia.				
Carbide Rockwell ball indentor - 1/16" dia.				
Carbide Rockwell ball indentor - 1/8" dia.				
Carbide Rockwell ball indentor - 1/4" dia.				
Carbide Rockwell ball indentor - 1/2" dia.				
Spare steel balls Rockwell in packs of 10	■	■	■	■
Spare carbide balls Rockwell (singles)	■	■	■	■
Brinell ball indentors	■	■	□	■
Carbide ball indentor - 1mm dia.				
Carbide ball indentor - 2mm dia.				
Carbide ball indentor - 2.5mm dia.				
Carbide ball indentor - 5mm dia.				
Carbide ball indentor - 10mm dia.				
Spare Brinell carbide balls (singles) all sizes	■	■	□	■
Vickers Pyramid 136°	■	■	■	■
Micro Vickers 136°	■	■	■	■
Micro Knoop	■	■	■	■



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PORTABLE HARDNESS TESTER "INSTRUMATIC"™

A fully mechanical instrument of the highest precision, robust, and free from normal maintenance

The large clearly marked dials on these unique instruments cover a full range of hardness values in Vickers, Brinell, Rockwell A, B, C, and Kp/mm² covering the British, American and German specifications

The Instrument

The system is entirely mechanical employing the use of special pre-loaded springs which provide a load of about 15kg to the diamond. Maximum penetration of the diamond into the specimen is 0.125mm (.005").

Operation and Use

The simplicity of the tester enables it to be used in almost any direction, (preferably vertically), without affecting accuracy. It can be used 'on site' with complete success. The grips are depressed to the fullest extent by using the palms of the hands and the hardness value can be read off the appropriate scale. Repeatability is excellent and the calibration can be checked by the user against a reference test block supplied with each instrument. Each tester is supplied complete in a case with detailed operating instructions.

Diamond Indentor

The instrument does not require any regular servicing. Should the diamond indentor become damaged, a new indentor can simply be fitted using the small tool supplied with the instrument.

Bench Stand

Bench stand with vee base for round parts, available as an option.

Magnetic Holder

A magnetic holder is available for checking the hardness of large ferrous finished surfaces such as lathe beds, milling machine tables and large surfaces which cannot be easily checked by hand.



Technical specifications

Code No.		Scale	Range
POR0001	No 1	Vickers Pyramid Brinell Rockwell C	100 - 1000 100 - 500 20 - 70
POR0002	No 2	Rockwell A Rockwell B Rockwell C	40 - 85 50 - 100 20 - 70
POR0003	No 3	Vickers Pyramid Brinell Rockwell B Rockwell C	100 - 1000 100 - 400 50 - 99 20 - 70
POR0004	No 4	kg/mm ² Brinell Rockwell B Rockwell C	35 - 140 100 - 400 50 - 99 20 - 70
POR0005	No 5	Vickers Pyramid Brinell	40 - 300 40 - 300
POR0006	No 6	Brinell Vickers Pyramid	40 - 300 40 - 300
POR0007	No 7	Brinell	100 - 600
POR0008	No 8	Vickers Pyramid	20 - 106
PBS0001	Precision Bench Stand		

Standard delivery

- Main unit
- UKAS certified test block
- Case
- Adjusting keys
- CV Instruments certificate
- Manual

Optional accessories

- Bench stand
- Magnetic holder
- Spare diamond indentor

PORTABLE HARDNESS TESTER CV "RANGEMASTER PLUS"™

Digital portable hardness tester for direct load application

The CV Rangemaster Plus hardness tester represents an ideal solution to the problems associated with portable hardness testing. Its clear digital display, ease of use and ability to operate in all major international scales make it the most comprehensive unit of its type currently available. The optional sturdy bench stand adds further to the flexible nature of this ergonomic gauge.

A simplified version of the popular Rangemaster Plus, the Rockmaster (ROC0001) shares many of the attributes of the more comprehensive unit and operates in either the Rockwell C or B scales.

- Dynamic test indicator
- Large digital readout
- Hardness values in all major international scales with simple conversion facilities from one to the other
- RS-232 output for connection to PC or serial printer
- Memory storage capacity for in excess of 400 readings
- Statistical summary
- Integral icon facility provides operator with easy visual identification of mode in which unit is operating
- Operates in temperatures from -5°C to +35°C
- Upper and lower control limits
- Last reading recall
- Battery and/or mains supply (optional)

Code No Description

RAN0001 Rangemaster
PBS0001 Bench Stand



Technical specifications

Hardness Scale	Vickers Pyramid No., Brinell, Rockwell B, Rockwell, Tensile Strength, Shore Scleroscope	
Testing Range	Vickers Pyramid No.	35 – 1000
	Brinell	100 – 500
	Rockwell B	30 – 100
	Rockwell C	20 – 70
	Tensile Strength	255 – 1999 N/mm ²
	Shore Scleroscope	24 – 97
Resolution	1	Vickers Pyramid No., Brinell, Tensile Strength, Shore Scleroscope
	0.1	Rockwell B, Rockwell
Model	C (ROC0001) B (ROC0002)	
Scale	HRC 20-70 (ROC0001) HRB 30-100 (ROC0002)	
Power	9V battery or adaptor	
Output	RS-232 serial output	

Standard delivery

- Main unit
- UKAS certified test block
- Case
- Adjusting keys
- CV Instruments certificate
- Manual

Optional accessories

- Bench stand
- Printer

UNIVERSAL HARDNESS TESTER TH-130 "IMPACT-D"™

Handheld dynamic metal hardness tester TH-130

- Dynamic rapid hardness test procedure
- Impact device D integrated: no cables!
- Wide measuring range
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leebs HLD
- For all metallic materials
- Provides testing at any angle, even upside down
- Simple handling and low test expenditure
- High accuracy $\pm 0.5\%$
- Clear LCD display showing all functions and parameters
- Conforms to ASTM A 956
- Data output RS-232 (Dataview software DV130 optional)
- Optional printer TA-220 available



Material	HLD	HRC	HRB	HRA	HB	HV	HS
Steel and cast steel	300-900	20-68	39-100	59-86	81-654	81-955	32-100
Cold work tool steel	300-840	20-67	-	-	-	80-898	-
Stainless steel	300-800	20-62	46-101	-	85-655	85-802	-
Grey cast iron	360-650	-	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	-	131-387	-	-
Cast aluminium alloys	200-570	-	24-34	-	27-164	-	-
Brass	200-550	-	13-95	-	40-173	-	-
Bronze	300-700	-	-	-	60-290	-	-
Copper	200-690	-	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Hardness parameter	HLD, HRC, HRB, HRA, HV, HB, HS
Measuring range/metallic materials	See table above
Accuracy	Within $\pm 6\text{HLD}$
Statistics	Average (max. 99)
Output	RS-232 (Dataview software optional)
Min. Surface roughness of workpiece	1.6 μm (Ra)
Impact device	D (standard) integrated
Workpiece max. hardness value	900HLD
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Workpiece minimum weight	2kg-5kg on solid support (0.05kg-2kg with couplant paste)
Workpiece min. thickness coupled	5mm
Workpiece min. case hardened depth	0.8mm
Indentation depth	See page: Impact devices data
Power	Rechargeable battery NiMH 3.6V, 70mAh
Charger	9V, 200mA (1.8VA)
Charging time	8 hours
Operating temperature	0°C to 40°C
Overall dimensions	155mm x 24mm x 55mm
Weight	180gr

Standard delivery

- Main unit with integrated impact device type D
- Test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Pocket protection case
- Data cable
- Certificate
- Manual
- Plastic carrying case

Optional accessories

- Test blocks UKAS certified with any hardness parameter
- Support rings for convex and concave surfaces
- Dataview software
- Printer TA-220
- See page accessories for IMPACT-series

UNIVERSAL HARDNESS TESTER TH-132 "IMPACT-C"™

Handheld dynamic metal hardness tester TH-132 for thin components

- Dynamic rapid hardness test procedure
- Integrated impact device C featuring low impact energy for surface hardened components and thin walled components
- Wide measuring range
- Direct display of hardness scales Rockwell HRC, Vickers HV, Brinell HB, Shore HS, Leeb's HLC
- For steel and cast steel, and cold work tool steel
- Impact device provides testing at any angle
- Simple handling and low test expenditure
- High accuracy $\pm 0.5\%$
- Conforms to ASTM A 956
- Clear LCD display showing all functions and parameters
- Optional printer TA-220 available



Material	HLC	HB	HRC	HV	HS
Steel and cast steel	350-960	80-683	20-69	80-996	31-102
Cold work tool steel	350-900	-	20-68	100-941	-

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Hardness parameter	HLC, HRC, HV, HB, HS, HL
Measuring range / metallic materials	See table above
Accuracy	Within ± 12 HLC
Statistics	Average (max. 99)
Output	RS-232 to printer
Min. Surface roughness of workpiece	0.4 μm (Ra)
Impact device	C integrated
Workpiece max. hardness value	960HLC
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Workpiece minimum weight	0.5kg-1.5kg on solid support (0.02kg-0.5kg with couplant paste)
Workpiece min. thickness coupled	1mm
Workpiece min. case hardened depth	0.2mm
Indentation depth	See page: Impact devices data
Power	Rechargeable battery NiMH 3.6V, 70mAh
Charger	9V, 200mA (1.8VA)
Charging time	8 hours
Operating temperature	0°C to 40°C
Overall dimensions	155mm x 24mm x 55mm
Weight	175gr

Standard delivery

- Main unit with integrated impact device type C
- Test block with HLC-value
- Charger
- Cleaning brush
- Coupling paste
- Pocket protection case
- Certificate
- Manual
- Plastic carrying case

Optional accessories

- Test blocks UKAS certified with any hardness parameter
- Support rings for convex and concave surfaces
- Printer TA-220 + cable
- See page accessories for IMPACT-series

UNIVERSAL HARDNESS TESTER TH-134 "IMPACT-DL"™

Handheld dynamic metal hardness tester TH-134 for confined spaces

- Dynamic rapid hardness test procedure
- Integrated impact device DL featuring testing in confined spaces
- Wide measuring range
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb's HLDL
- For materials steel and cast steel
- Impact device provides testing at any angle
- Simple handling and low test expenditure
- High accuracy $\pm 0.5\%$
- Conforms to ASTM A 956
- Clear LCD display showing all functions and parameters
- Optional printer TA-220 available



Material	HLDL	HB	HRB	HRC	HV	HS
Steel and cast steel	560-950	81-646	37-100	21-68	80-950	30-96

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Hardness parameter	HLDL, HRC, HRB, HV, HB, HS
Measuring range / metallic materials	See table above
Accuracy	Within ± 12 HLDL
Statistics	Average (max. 99)
Output	RS-232 to printer
Min. Surface roughness of workpiece	1.6 μ m (Ra)
Impact device	DL (integrated)
Needle front section of DL-device	Diameter = 4.2mm Length = 50mm
Workpiece max. hardness value	950HLDL
Workpiece radius (convex/concave)	Rmin = 10mm
Workpiece minimum weight	2kg on solid support (0.1kg with couplant paste)
Workpiece min. thickness coupled	5mm
Workpiece min. case hardened depth	0.8mm
Indentation depth	See page: Impact devices data
Power	Rechargeable battery NiMH 3.6V, 70mAh
Charger	9V, 200mA (1.8VA)
Charging time	8 hours
Operating temperature	0°C to 40°C
Overall dimensions	210mm x 24mm x 55mm
Dimensions DL impact device	LxD 50mm x 4mm diameter
Weight	200gr

Standard delivery

- Main unit with integrated impact device type DL
- Test block with HLDL-value
- Charger
- Cleaning brush
- Couplant paste
- Pocket protection case
- Certificate
- Manual
- Plastic carrying case

Optional accessories

- Test blocks UKAS certified with any hardness parameter
- Printer TA-220 + cable
- See page accessories for IMPACT-series

ACCESSORIES FOR IMPACT SERIES™



MINI-PRINTER TA-220

Reliable and fast mini-printer with quality EPSON print head and clear LCD display, RS-232 interface. Optional data cable TA-510 to IMPACT series available. Prints all numerical IMPACT hardness test data direct real-time or per batch after testing.



TEST BLOCK D

For performance tests of IMPACT series a test block D is available (HLD hardness value). Tolerance allowed is ± 6 units HLD. Values too low: impact device dirty. Value too high: spherical test tip flattened, or test block impacted all over. Optional: similar test block D but UKAS certified according to any hardness scale such as HRC or HV for traceable reference.

COUPLANT

Light parts can be coupled to a solid base plate using a thin layer of coupling paste. Both contact surfaces must be perfectly flat.

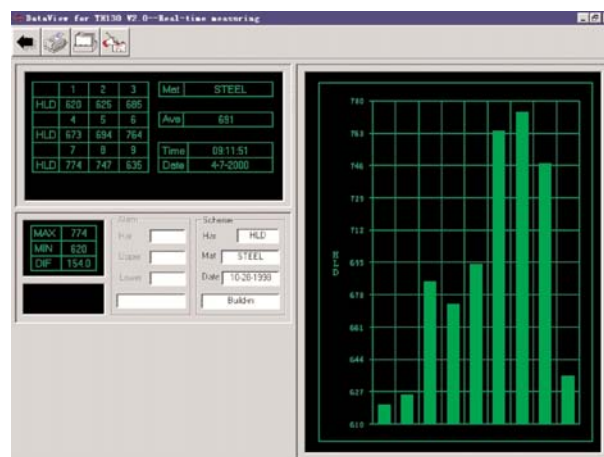


SUPPORT RINGS

On curved surfaces having a radius of under 30mm, effective positioning on the component is facilitated by the use of support rings. This ring can be screwed on front of the impact device.

We offer a set of 7 rings:

convex model 10mm-15mm / 14.5mm-30mm / 25mm-50mm,
concave model 11mm-13mm / 12.5mm-17mm / 16.5mm-30mm,
universal model.



DATAVIEW FOR IMPACT TH-130

User friendly Windows software for IMPACT TH-130 version 2.0. For hardness data processing, graphical representation, real time limit exceeding alarm, statistical data, database. Direct display on computer in any available hardness scale in IMPACT TH-130. Connection of IMPACT TH-130 to computer with data cable.

UNIVERSAL HARDNESS TESTER TH-150™

Handheld dynamic metal hardness tester with integrated Impact device D

- New model with ergonomic design!
- Dynamic rapid hardness test procedure
- Impact device D integrated: no cables!
- Wide measuring range
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leebs HLD
- For all metallic materials
- Provides testing at any angle, even upside down
- Simple handling and low test expenditure
- High accuracy $\pm 0.5\%$
- Clear LCD display showing all functions and parameters with backlight
- Conforms to ASTM A 956
- Data output RS-232 (Dataview software TH-150 optional)
- Optional printer TA-220S available



Material	HLD	HRB	HRC	HB	HV	HS
Steel and cast steel	300-900	38-100	20-68	81-654	81-955	32-100
Cold work tool steel	300-840	-	20-67	-	80-898	-
Stainless steel	300-800	46-101	19-62	85-655	85-802	-
Grey cast iron	360-650	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	131-387	-	-
Cast aluminium alloys	170-570	24-84	-	19-164	-	-
Brass	200-550	13-95	-	40-173	-	-
Bronze	300-700	-	-	60-290	-	-
Copper	200-690	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Hardness parameter	HRC, HRB, HV, HB, HS, HLD
Measuring range / metallic materials	See table above
Accuracy	Within $\pm 6\text{HLD}$
Statistics	Average (max. 256)
Output	RS-232 (Dataview software optional)
Min. Surface roughness of workpiece	1.6 μm (Ra)
Impact device	D (standard) integrated
Workpiece max. hardness value	900HLD
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Workpiece minimum weight	2kg-5kg on solid support (0.05kg-2kg with couplant paste)
Workpiece min. thickness coupled	5mm
Workpiece min. case hardened depth	0.8mm
Indentation depth	See page: Impact devices data
Continuous working time	300 h (without backlight)
Power	Battery Lithium 3V, CR $\frac{1}{2}$ AA
Operating temperature	0°C to 40°C
Overall dimensions	Height 158mm, Body diameter oval 60mm/39mm
Weight	150gr

Standard delivery

- Main unit with integrated impact device type D
- Test block with HLD-value
- Cleaning brush
- Couplant paste
- Battery Lithium 3V, CR $\frac{1}{2}$ AA
- Data cable
- Certificate
- Manual
- Plastic carrying case

Optional accessories

- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Printer TA-220S

UNIVERSAL HARDNESS TESTER TH-152™

Handheld dynamic metal hardness tester with integrated Impact device C

- Integrated Impact Device C featuring low impact energy for surface hardened components and thin walled components
- Memory for up to 256 data
- Battery low indication
- Clear LCD with backlight
- Data output RS-232
- Direct display of hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leebs HLC
- For materials steel and cast steel, CWT.ST and C.Alum
- Simple handling and low test expenditure
- Conforms to ASTM A 956
- Optional printer TA-220S available



Material	HLC	HB	HRC	HV	HS	HRB
Steel and cast steel	350-960	80-683	20-69	80-996	31-102	-
Cold work tool steel	350-900	-	20-68	100-941	-	-
C.Alum	230-640	23-210	-	-	-	22-85

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Standard Impact Device	C integrated
Hardness scales	HLC, HB, HRC, HRB, HV, HS
Measuring range / materials	See table above
Accuracy	±12HLC
Memory	256 average readings
Output	RS-232 to printer
Min. Surface roughness of workpiece	0.4µm (Ra)
Max. Workpiece Hardness	960HLC
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Min. Workpiece weight	0.5~1.5kg on stable support 0.02~0.5kg with compact coupling
Min. Workpiece thickness coupled	1mm
Min. Thickness of hardened layers	0.2mm
Indentation depth	See page: Impact devices data
Continuous working time	300 h (without backlight)
Power	Battery Lithium 3V, CR½AA
Operating temperature	0°C~40°C
Overall dimensions	149mm x 60mm x 39mm
Weight	145gr

Standard delivery

- Main unit integrated with impact Device C
- Test block with HLC value
- Cleaning brush
- Battery Lithium 3V, CR½AA
- Data cable
- Certificate
- Manual
- Carrying case

Optional accessories

- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Printer TA-220S

UNIVERSAL HARDNESS TESTER TH-154™

Handheld dynamic metal hardness tester with integrated Impact device DL

- Integrated impact device DL featuring testing in confined spaces
- Memory up to 256 data
- Delete the display result automatically or manually
- Battery low indication
- Large LCD with backlight
- Data output RS-232
- Direct display of hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb's HLDL
- For materials steel and cast steel
- Tests at any angle, even upside down
- Simple handling and low test expenditure
- Conforms to ASTM A 956
- Optional printer TA-220S available



Material	HLD	HB	HRB	HRC	HV	HS
Steel and cast steel	560-950	81-646	37-100	20-68	80-950	30-96

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Standard Impact Device	DL integrated
Hardness scales	HLDL, HB, HRC, HRB, HV, HS
Measuring range / materials	See table above
Accuracy	±12HLDL
Memory	256 average readings
Output	RS-232 to printer
Min. Surface Roughness of workpiece	1.6µm (Ra)
Needle front section of DL-device	Diameter= 2.8mm Length= 50mm
Max. Workpiece Hardness	950HLDL
Workpiece radius (convex/concave)	Rmin = 50mm
Min. Workpiece weight	2~5kg on stable support 0.05~2kg with compact coupling
Min. Workpiece thickness coupled	5mm
Min. Thickness of hardened layers	0.8mm
Indentation depth	See page: Impact devices data
Continuous working time	300 h (without backlight)
Power	Battery Lithium 3V, CR½AA
Operating temperature	0°C ~ 40°C
Overall dimensions	213mm x 60mm x 39mm
Weight	170gr

Standard delivery

- Main unit integrated with impact Device DL
- Test block with HLDL value
- Cleaning brush
- Battery Lithium 3V, CR½AA
- Data cable
- Certificate
- Manual
- Carrying case

Optional accessories

- Test blocks UKAS certified in any hardness parameter
- Printer TA-220S

UNIVERSAL HARDNESS TESTER TH-170™

Handheld dynamic metal hardness tester with integrated Impact device D

■ New developed model of TH-130

- Impact Device D integrated: no cables
- Memory up to 270 data in 9 group files
- Automatic identification of Impact test direction
- Upper and lower limit setting
- Possibility to delete the display result automatically or manually
- Battery low indication
- Large LCD with backlight
- Battery capacity display
- Data output USB direct to computer!
- Direct display of hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leebs HLD
- For materials steel and cast steel
- Tests at any angle, even upside down
- Simple handling and low test expenditure

NEW!



Material	HLD	HRB	HRC	HB	HV	HS
Steel and cast steel	300-900	38-100	20-68	81-654	81-955	32-100
Cold work tool steel	300-840	-	20-67	-	80-898	-
Stainless steel	300-800	46-101	-	85-655	85-802	-
Grey cast iron	360-650	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	131-387	-	-
Cast aluminium alloys	170-570	23-84	-	19-164	-	-
Brass	200-550	13-95	-	40-173	-	-
Bronze	300-700	-	-	60-290	-	-
Copper	200-690	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Standard Impact Device	D integrated
Hardness scales	HLD, HB, HRC, HRB, HV, HS
Measuring range / materials	See table above
Measuring direction	360°
Accuracy	±6HLD (760 ±30HLD), ±10HLD (530 ±40HLD)
Memory	270 average readings in 9 group files
Output	USB 2.0
Min. Surface Roughness of Workpiece	1.6µm (Ra)
Max. Workpiece Hardness	900HLD
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Min. Workpiece weight	2~5kg on stable support 0.05~2kg with compact coupling
Min. Workpiece thickness coupled	5mm
Min. Thickness of hardened layers	0.8mm
Indentation depth	See page: Impact devices data
Continuous working time	150 h (without backlight)
Power	AAA 1.5V batteries (2 pcs)
Operating temperature	0°C~40°C
Overall dimensions	155mm x 55mm x 25mm
Weight	Approx. 166gr

Standard delivery

- Main unit integrated with impact Device D
- Test block with HLD value
- Cleaning brush
- Battery AAA 1.5V (2pcs)
- Software for connection to PC through USB
- Certificate
- Manual
- Carrying case

Optional accessories

- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces

UNIVERSAL HARDNESS TESTER TH-140B™

Portable dynamic metal hardness tester

- Dynamic rapid hardness test procedure
- Wide measuring range
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb's HL
- Conversion to tensile strength σ_B (U.T.S.)
- For all metallic materials
- Impact device provides testing at any angle, even upside down
- Integral and removable printer included
- Simple handling and low test expenditure
- High accuracy $\pm 6\text{HLD}$
- Conforms to ASTM A 956
- Six impact devices available for special applications (see next pages)
- Clear LCD display showing all functions and parameters



Material	HL	HRB	HRC	HB	HV	HS
Steel and cast steel	300-900	38-100	20-68	81-654	81-955	32-100
Cold work tool steel	300-840	-	20-68	-	80-898	-
Stainless steel	300-800	46-101	-	85-655	85-802	-
Grey cast iron	360-650	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	131-387	-	-
Cast aluminium alloys	200-570	23-84	-	19-164	-	-
Brass	200-550	13-95	-	40-173	-	-
Bronze	300-700	-	-	60-290	-	-
Copper	200-690	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure

Technical specifications

Hardness parameter	HL, HRC, HRB, HV, HB, HS
Measuring range / metallic materials	See table above
Tensile strength U.T.S. range (steel only)	σ_B from 374 to 2652 mPa
Accuracy	Within $\pm 6\text{HLD}$
Memory	48-350 groups of data
Impact device	D (standard)
Optional impact devices	DC/D+15/DL/G/C/E (see next page)
Data output	RS232
Workpiece max. hardness value	996HV
Workpiece radius (convex/concave)	$R_{\min} = 50\text{mm}$ (with support ring $R_{\min}=10\text{mm}$)
Min. Workpiece weight	2~5kg on stable support 0.05~2kg with compact coupling
Workpiece min. thickness coupled	5mm (except with impact device G: 10mm, C: 1mm)
Workpiece min. case hardened depth	0.8mm
Indentation depth	See next page: Impact devices data
Power	Rechargeable batteries NiCd 1.25V (5 pcs)
Charger	12V, 600mA (1.8VA)
Charging time	8 hours
Operating temperature	0°C to 40°C
Overall dimensions	268mm x 86mm x 50mm
Weight	530gr (including impact device and printer)

Standard delivery

- Main unit with impact device type D
- Printer (on top)
- Test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Table support for main unit
- Communication cable
- Certificate
- Manual
- Plastic carrying case

Optional accessories

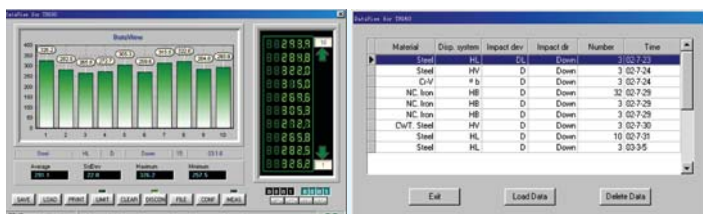
- Special impact devices (see overview on next page)
- Test blocks UKAS certified in any hardness parameters
- Support rings for convex and concave surfaces
- Dataview software TH-140

UNIVERSAL HARDNESS TESTER TH-160™

Portable dynamic metal hardness tester with thermal printer, statistics and RS-232 output

New model featuring:

- Large memory for 1000 tests
- Auto-recognition of connected Impact Device
- Auto-recognition of Impact Device test direction
- Statistical data and upper-lower limit setting
- Prints all test results and histogram
- RS-232 interface (to hyperterminal or dataview software)
- Time and date setting; auto-clock
- Back-light LCD
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb's HL
- Conversion to tensile strength σ_b (U.T.S.)
- For all metallic materials
- Impact device provides testing at any angle, even upside down
- Integral thermal printer
- High accuracy $\pm 6\text{HLD}$ and conforms to ASTM A 956
- Six impact devices are available for special applications (see next pages)



Dataview for TH-160

Very user friendly Windows operated software package



Technical specifications

Hardness parameter	HL, HRC, HRB, HV, HB, HS
Measuring range / metallic materials	See table above
Tensile strength U.T.S. range (steel only)	σ_b from 374 to 2652
Accuracy	Within $\pm 6\text{HLD}$
Functions	Auto-recognition of connected probe and probe test direction, auto-conversion to other hardness scales
Memory	1000 test maximum
Data-output	RS-232 to hyperterminal (MS) and dataview TH-160
Printer	Thermal printer showing all test results, settings and histogram
Statistics	Average value, min-max, upper-lower limits
Impact device	D (standard)
Optional impact devices	DC/D+15/DL/G/C/E (see next page)
Workpiece max. hardness value	900HLD
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Min. Workpiece weight	2~5kg on stable support 0.05~2kg with compact coupling
Workpiece min. thickness coupled	5mm (except with impact device G: 10mm, C: 1mm)
Workpiece min. case hardened depth	0.8mm
Indentation depth	See next page: Impact devices data
Power	Rechargeable Li battery, 6V (1 pc)
Charger	6V, 500mA (1.8VA)
Charging time	2.5 - 4 hours
Operating temperature	0 to 40°C
Overall dimensions	230mm x 90mm x 47mm
Weight	420 gr (including impact device and printer)

Standard delivery

- Main unit with impact device type D
- Printer (on top)
- Test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Table support for main unit
- Communication cable
- Certificate
- Manual
- Plastic carrying case

Optional accessories

- Special impact devices (see overview on next page)
- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Dataview software TH-160

IMPACT DEVICES FOR SPECIAL APPLICATIONS

Hardness testing devices for models TH-140/160

Technical specifications

Impact devices:	D/DC/DL	D+15	C	G	E
Impact energy:	11 Nmm	11 Nmm	3 Nmm	90 Nmm	11 Nmm
Mass of impact body:	5.5 gr DL: 7.3	7.8 gr	3.0 gr	20 gr	5.5gr
Test tip					
■ Hardness	1600HV	1600HV	1600HV	1600HV	5000HV
■ Diameter	3mm	3mm	3mm	5mm	3mm
■ Material			Tungsten carbide		Diamond
Impact body					
■ Diameter	20mm	20mm	20mm	30mm	20mm
■ Length	147/86mm	162mm	141mm	254mm	155mm
■ Weight	75/50gr	80gr	75g	250g	80g
Max. hardness of sample:	940 HV	940HV	1000HV	650HB	1200HV
Preparation of surface					
■ Roughness class ISO	N7	N7	N5	N9	N7
■ Max. roughness depth Rt	10µm	10µm	2.5µm	30µm	10µm
■ Average roughness Ra	2µm	2µm	0.4µm	7µm	2µm
Min. weight of sample					
■ Of compact shape	5kg	5kg	1.5kg	15kg	5kg
■ On solid support	2kg	2kg	0.5kg	5kg	2kg
■ Coupled on plate	0.1kg	0.1kg	0.02kg	0.5kg	0.1kg
Min. thickness of sample					
■ Coupled	3mm	3mm	1mm	10mm	3mm
■ Min. thickness of hardened layers	0.8mm	0.8mm	0.2mm	-	0.8mm

Indentation of test tip

Impact devices:	D/DC/DL	D+15	C	G	E
With 300 HV					
■ Diameter	0.54mm	0.54mm	0.38mm	1.03mm	0.54mm
■ Depth	24µm	24µm	12µm	53µm	24µm
With 600 HV					
■ Diameter	0.45mm	0.45mm	0.32mm	0.90mm	0.45mm
■ Depth	17µm	17µm	8µm	41µm	17µm
With 800 HV					
■ Diameter	0.35mm	0.35mm	0.30mm	-	0.35mm
■ Depth	10µm	10µm	7µm	-	10µm

IMPACT DEVICES FOR SPECIAL APPLICATIONS

Hardness testing devices for models TH-140/160



IMPACT DEVICE E

Special feature: Synthetic diamond test tip (approximately 5000 HV).

Application: For measurements in the extremely high hardness range (always in excess of 50 HRC/650 HV). Tool steels with high carbide content inclusions. For measurements up to 1200 HV.



IMPACT DEVICE G

Special feature: Enlarged test tip, increased impact energy (approximately 9 times that of type D) Low demands on measuring surface finish. For measurements in the Brinell range only (max. 650 HB)

Application: Solid components, e.g. heavy castings and forgings.

IMPACT DEVICE D

Special feature: Universal standard unit.

Application: For the majority of hardness testing assignments.

IMPACT DEVICE C

Special feature: Reduced impact energy (approximately 1/4 of type D).

Application: Surface hardened components, coatings, thin walled or impact sensitive components (small measuring indentation).

IMPACT DEVICE DC

Special feature: Extremely short impact device. Spring loaded with a special loading stick. Otherwise as for type D.

Application: Use in very confined spaces, e.g. in holes, cylinders or for internal measurements on assembled machines.

IMPACT DEVICE D+15

Special feature: Particularly slim front section and with measuring coil moved back.

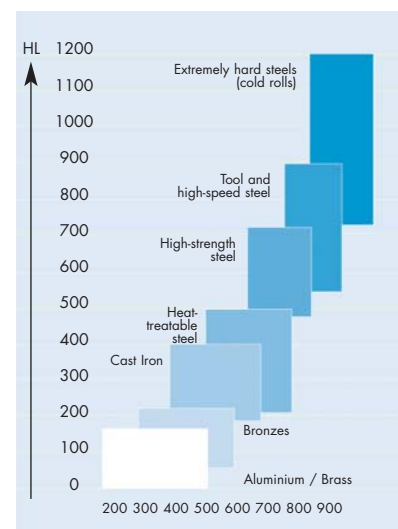
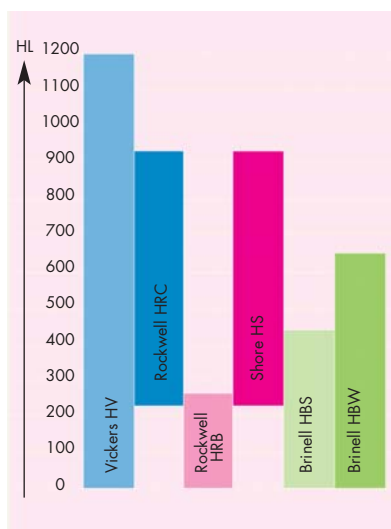
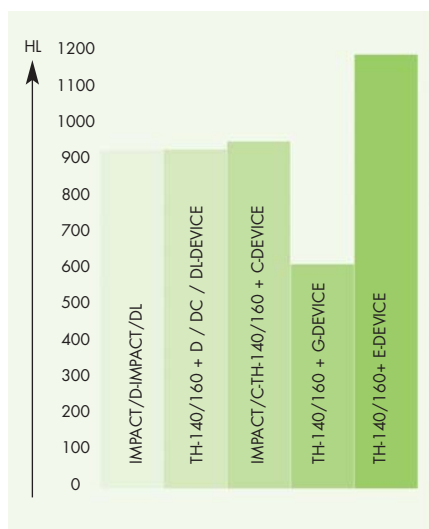
Application: Hardness measurements in grooves and on recessed surfaces.

IMPACT DEVICE DL

Special feature: Needle front section diameter 4.2mm, length 50mm.

Application: Measurements in extremely confined spaces

Impact Device G



BRINELL HARDNESS TESTER CV-HB120™

Portable hydraulic system featuring Brinell indentations up to 3000kgf

The well known CV-HB120 Brinell tester is designed to make impressions that are used to measure the hardness of metal.

This universally recognized tester has a number of advantages:

- **Permanence** Impression can be checked and rechecked anytime
- **Accuracy** Calibrated to 0.5 of 1% of load ;
Can be used for higher loads up to 3000kg
Breaks through surface heat treatment to get to the core of the material
- **Versatility** Can be used in virtually any position;
right-side up, upside down or sideways
- **Durability** Some portable Brinell testers have been working over 60 years

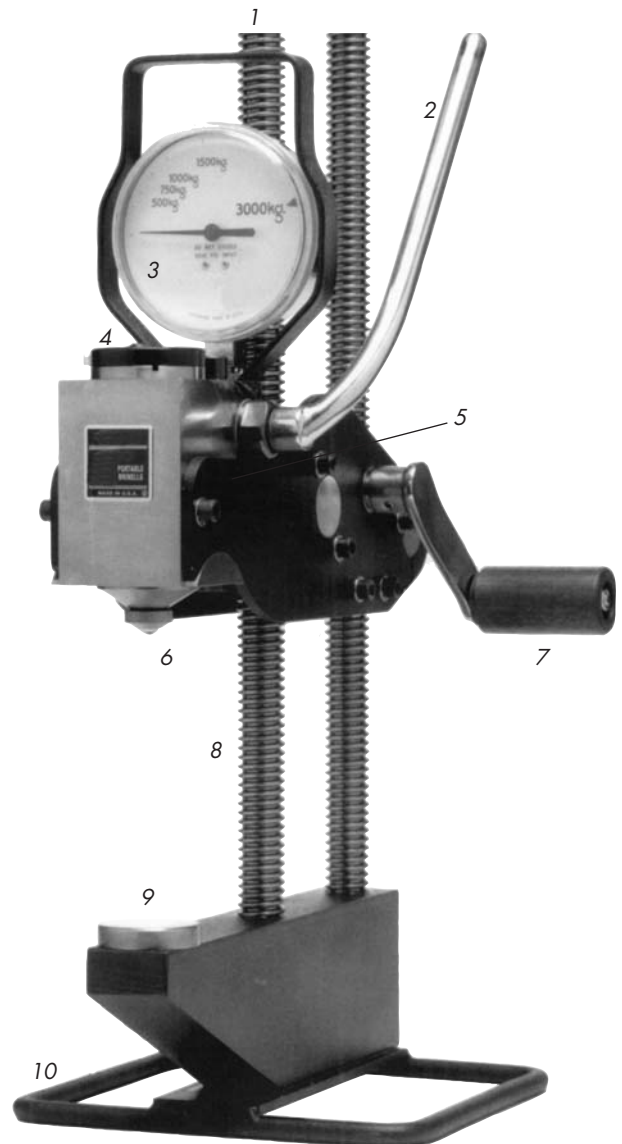
CV-HB120 Brinell hardness testers are lightweight, easy to manoeuvre and require only one operator, making them ideal for use as portable or bench units. Versatile enough to test virtually any size and shape of metal specimen.

These Brinell testers are easy to use. The operator simply places the specimen between the anvil and the test head, cranks the test head down onto the specimen, locking the tester in place, closes the pressure release valve, and pulls the hydraulic lever until desired load is reached.

The tester applies up to a 3000kg load on a 10mm ball, making a lasting impression, which is available for re-reading at any time.

A by-pass valve is automatically activated at the calibrated load, eliminating the chance of overloading. The impression is then read and recorded by the operator using a Brinell microscope such as the deep reading microscope or a Brinell scanning system CV-HB100.

The CV-HB120 meets all international standards for Brinell testing



- 1 Alloy steel-threaded posts – Wear longer, resist distortion
- 2 Pressure lever – Used to apply up to a true 3000kg load
- 3 Bourdon-type pressure gauge – Indicates true load exerted by pump and when full load has been reached
- 4 Stainless steel test head – Contains sealed hydraulic pump and reservoir. Calibrated to release load at 3000kg. Fully interchangeable with optional bases. Also available in a low pressure version for testing softer metals and in a long ram version
- 5 Gear train with hand crank – Allows easy, positive adjustment of opening to any size specimen up to 14" 20' optional
- 6 Standard 10mm brinell ball – Can be easily changed to 2.5mm and 5mm ball or reverse direction load head
- 7 Handle – Made of walnut wood for easy grip and durability
- 8 Throat – Standard is 4" with 6" optional
- 9 Flat, dome and vee – Supplied as standard equipment to test various shaped specimens. Also accepts reverse direction impression adapters
- 10 Wire basket – Rounded corners and no sharp edges for maximum safety

Complete testers

Standard Brinell hardness tester –

The Brinell hardness tester has a base with a 14" gap and 4" throat: head and gauge calibrated for a 0-3000kg load:

filled hydraulic reservoir; 10mm steel ball, flat, dome and vee shaped anvils instruction and maintenance manuals.

BRINELL HARDNESS TESTER CV-HB120™

Portable hydraulic system featuring Brinell indentations up to 3000kgf

Standard test head

Calibrated accurate to 1/2 of 1% load.
Releases at 3000kg automatically.
Capable of incremental loads.



Standard test head with long ram

Same features as standard test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges.



Low pressure test head

Applied load and indicator dial are coordinated for softer metals.
Can be calibrated to release at loads of 62-1/2kg, 125kg, 250kg, 500kg, or 1000kg.



Low pressure test head with long ram

Same features as low pressure test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges.



Adapter to hold test head upright without base

For testing large flats it enables test heads to be used under large drill presses, boring mills, arbor presses and beams that are capable of withstanding 3000kg load.



Chain adapter

Used for large cylinders it fits onto a standard test head and wraps around specimens that are too big for regular tester. High strength chrome/molybdenum steel arms hold the chain to the test head and allow it to stay rigid while the chain takes the full thrust of the load. Supplied with 4" chain.



Base

14" base with 14" test height opening and 4" throat is standard. Optional 6" throat with either 14" or 20" test height opening available, 20" base also available with 4" throat and 20" test height opening.



2.5mm and 5mm ball adapter

Used on softer materials or where a smaller impression is desired.



Stage micrometer

Used to check calibration of Brinell Microscope by placing the microscope on the stage micrometer and aligning the grid on the stage micrometer with the grid on the microscope. If the grids doesn't match perfectly, the microscope is out of calibration and should be re-calibrated. Meets ASTM 50, and is traceable to NIST standards.



Brinell microscope

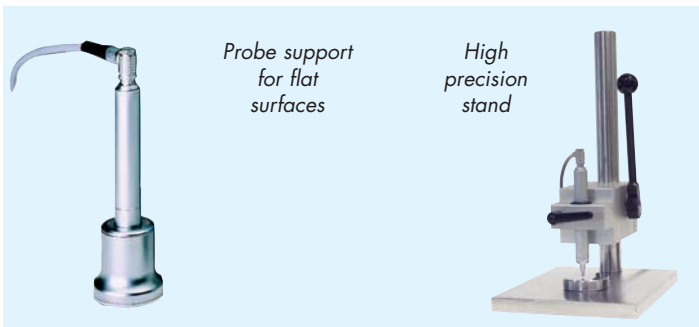
Constructed from stainless steel, the rugged and optically reliable Brinell microscope is the most versatile on the market today. Featuring a 20x pre-focused lens, the microscope has a narrow nosepiece which easily fits into tight recesses, resulting in less grinding on castings, billets and dies. For added stability when performing flat work, a slip-on base adapter is included. A side opening in the microscope allows plenty of natural light for viewing, and a cordless movable pen light can be used in dim conditions. Calibrated on equipment traceable to NIST standards, the Brinell microscope meets ASTM 5-10 specifications. It is ready to use and comes equipped with a handy storage case



PORTABLE VICKERS HARDNESS TESTER "ULTRAMATIC"™

Hardness tester CV-HV400 for portable accurate testing on metals, plastics and ceramics

- Ultrasonic Contact Impedance test principle: very accurate!
- Suitable for hardness tests on metals, plastics, ceramics
- Direct reading in Vickers HV, and direct conversion to HRC, HRB, HB and UTS
- High reproducibility within $\pm 1\%$
- Extensive range of application at locations difficult to access
- Large memory, statistics and data output
- Windows software for testing, data processing and documentation



Technical specifications

Measuring principle	According to the UCI method (ultrasonic contact impedance principle)		
Indenter	Vickers diamond (angle 136°)		
Test load	3N, 10N, 20N, 30N, 49N, 98N (different probes)		
Measuring range	Vickers	HV	10 - 3000 (direct)
	Rockwell	HRC	20 - 68 (conversion)
	Rockwell	HRB	41 - 99.5 (conversion)
	Brinell	HB	(76) - 447 (conversion)
	UTS	N/mm ²	255 - 2180 (conversion)
Reproducibility	Vickers	HV	$\pm 1\%$
	Rockwell	HRC	± 0.5
	Rockwell	HRB	± 1.2
	Brinell	HB	$\pm 1\%$
Applicable test materials	Primarily metals; plastics or ceramics may be tested using a standard calibration block		
Display	Large graphical, backlit display, contrast and brightness adjustable, display of hardness scales HV, HRC, HB		
Calibration	Storage of up to 20 calibrations for different materials		
Display languages	English, German, French (selectable)		
Memory	1000 readings, storage in batches with date, hour, and go/no go judgement Optional: memory for 30.000 readings		
Statistics	Mean value, minimum, maximum, standard deviation absolute and relative. Delete single readings		
Interface	Serial:	RS-232C and RS485	
	Parallel:	Printer	
Printer output	Prints hardness values, hour and date. Prints statistics of stored data		
Power	Power supply 100-240V / 50-60Hz		
Batteries	Rechargeable 9.6V / 1700 mAh (2.5 hours charging, 5 hours continuous use)		
Operating temperature	0°C - 50°C		
Dimensions	Display unit:	85mm x 225mm x 198mm	
	Probe:	19.5 diameter x 175mm length	
Weight	2200g (including probe 190g)		

Standard delivery

- Main unit
- Cable
- Power supply 100-240V / 50-60Hz
- Carrying case
- Manual
- CV Instruments certificate

Optional probes

- 3N, 10N, 20N, 30N, 49N, 98N

Software options for the main unit

- SPS Option for use in automated testing systems
- Measurement of sinter materials
- Storage of 30000 measurements

Optional accessories

- High precision stand for probe CV-H4S
- Probe shoes for flat surfaces
- Probe shoes for convex surfaces 10mm - 50mm
- Probe shoes for convex surfaces 50mm - 250mm
- Probe SL type (slim nose)
- Probe shoes for probe SL type (width 21mm)
- Windows software program CV-H4DAT for data transmission to the PC (incl. cable)
- Windows software program CV-H4CON for production-following hardness testing
- Plastic handle for probe CV-H4G
- Carrier bag for main unit and accessories



Instruments

HARDNESS TESTERS - **DUROMETERS** - SURFACE FINISH TESTERS
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

visit www.cvinstruments.com

SHORE SCALE "A" DUROMETER CV-HS100™

Handheld durometer for Shore A hardness testing

- Analogue durometer for Shore A
- Stainless steel precision compression spring
- Glass lens resists scratching and discoloration



Technical specifications

Test scales available	A
Result display	Hardness result Shore
Scale graduations	0-100
Result display resolution	1 pt. increments
Pointer sweep	360°
Pressure foot diameter	18mm
Pressure foot length	25mm
Weight	200gr

Standard delivery

- Main unit
- Carrying case
- CV Instruments certificate

Optional accessories

- Operating stands CV-HSOS
- Test block

SHORE TYPE DUROMETERS CV-SH SERIES™

Handheld durometer for soft materials

- Fast and easy to read
- Portable
- Hand-held operation or via optional bench stand
- Available in either Shore A or Shore D
- Testing rubbers, plastics, leather and other soft materials
- Supplied with a setting / reference block
- Supplied as standard with UKAS certificate of calibration
- The optional bench stand is intended for use with 1kg loading for Shore 'A' scales and 5kg loading for Shore 'D' scales
- According to DIN 53505, ASTM D2240, ISO R/868
- Standard UKAS certified

Code No Description

- SHA0001 Shore "A" Scale
- SHD0002 Shore "D" Scale
- SHA0003 Operating Stand



Technical specifications

Test scales available	A or D Scale
Standards	Conforms to DIN 53505, ASTM D2240, ISO R/868
Result display	Hardness result Shore
Presser foot	Diameter 18mm
Applications A scale	Soft rubber, natural rubber products, neoprene, polyester, soft PVC, leather, thiokol, nitrile rubbers, etc.
Applications D scale	Hard rubber, hard synthetic materials, thermoplastics, polystyrol, vinyl sheets, cellulose acetates, densified wood, etc.
Penetrator	A scale: blunt taper 35° D scale: sharp point 30°
Scale graduation	0-100

Standard delivery

- Main unit
- UKAS certificate of calibration
- Blunt taper 35° penetrator (A scale)
- Sharp point 30° penetrator (D scale)

Optional accessory

- Operating stand (SHA0003)
- Test block

SHORE SCALE "A" DUROMETER THS-200™

Handheld digital durometer for Shore A hardness testing

- Digital durometer for Shore A hardness testing
- Pocket size model with integrated probe
- Meets DIN 53505, ASTM D 2240, ISO 7619
- RS-232C data output
- Operating stand optional
- Bright and clear LCD display
- 300 hours continuous use with standard batteries: no cables!
- Optional:
 - Stand THS-200/01 (see next page)



Technical specifications

Test scales available	Shore A
Standards	Conforms to DIN53505, ASTM D2240, ISO 7619
Result display	Hardness result, average value, max value (peak value lock), battery indication
Result display resolution	1 unit
Data output	RS-232
Statistics	Total test, highest hardness, average
Features	Automatic switch off, battery low alarming,
Operating temperature	0°C - 40°C
Power requirements	3 x 1.25V batteries (V357)
Battery life	300 Hours
Dimensions	168mm x 31mm x 30mm
Weight	145gr

Standard delivery

- Main unit
- Batteries
- Case
- Manual
- Certificate

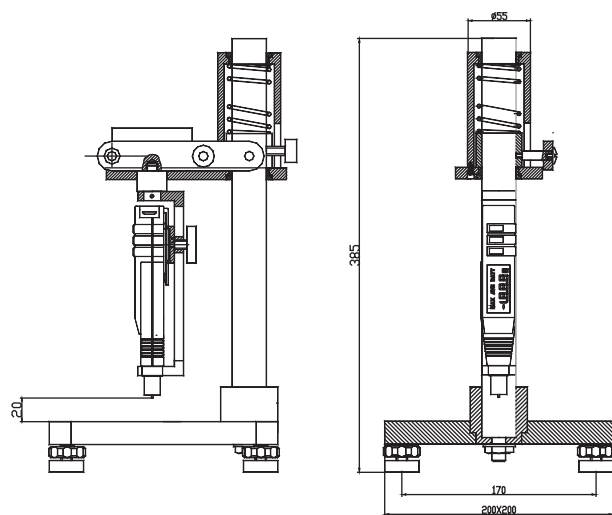
Optional accessories

- Data cable to pc
- Operating stand with constant load THS-200/01

DUROMETER STAND THS-200/01™

Stand for THS-200

- Operating stand for THS-200
- Convenient and accurate way for repetitive testing of hardness
- Eliminates human error
- Measured values are more accurate and reliable
- Hardness of rubber and plastics can be measured



Technical specifications

Max. sample thickness	20mm
Construction	Aluminium
Net weight	19.8kg
Durometer types	THS-200A

SHORE SCALE "D" DUROMETER THS-210

Handheld digital durometer for Shore D hardness testing

- Digital durometer for Shore D hardness testing
- Pocket size model with intergrated probe
- Standards: DIN 53505, ASTM D 2240, ISO 7619, JIS K7215
- RS-232 data output
- Operating stand optional
- Bright and clear LCD display
- 300 hours continuous use with standard batteries
- Automatic switch off
- Battery low indication and alarm



Technical specifications

Test scale available	Shore D
Standards	Conforms to DIN53505, ASTMD2240, ISO 7619, JIS K7215
Display	Hardness result, Average value, Max. value (Peak value lock), Battery indication
Data output	RS-232
Measuring range	0-100HD
Measurement deviation	Within 20~90 HD, error $\leq \pm 1$ HD
Display resolution	0.2 unit
Operating temperature	0°C ~ 40 °C
Power requirements	3 x 1.55V (SR44) Button batteries or 4.5V AC/DC adapter
Battery life	300 hours
Dimensions	173mm x 56mm x 42mm
Weight	233gr

Standard delivery

- Main unit
- Button batteries 1.55V (3 pcs)
- Certificate
- Manual

Optional accessories

- RS-232 communication cable
- Operating stand THS-210/01
- Printer TA-220
- THS-210 4.5V AC/DC power adapter

DUROMETER STAND THS-210/01 TM

Stand for THS-210

- Operating stand for THS-210
- Convenient and accurate way for repetitive testing of hardness
- Eliminates human error
- Measured values are more accurate and reliable
- Hardness of rubber and plastics can be measured



Technical specifications

Durometer types	THS-210
Max sample thickness	80mm
Max diameter of working table	ø 116mm
Max lifting displacement	24mm
Max touch distance between pressure foot and working table	0.05mm
Dimensions	420mmx200mmx170mm
Weight	22kg

DIGITAL SHORE SCALE "A" DUROMETER CV-DSAS001

Handheld digital durometer for Shore A hardness testing

- Testing rubber, plastic, leather and all other soft materials
- Fast and easy to read
- Large digital display, digits 8mm high
- Portable
- Use by hand or mounted on a stand
- Available in Shore A
- Supplied with a reference block
- Data output for SPC
- Power on/off automatic
- Electronic module protection to IP65, even with data output
- Can be used in conjunction with Shore bench stand



Technical specifications

Scale	Shore A
Resolution	0.1
Standards	Conforms to DIN 53 505, ASTM D2240 and ISO R/868
Range	0-100
Pressure foot	∅ 18mm
Indenter	Blunt taper
Tip angle	35°
Indenter diameter	1.25mm
Battery	Lithium 3V, CR2032
Data output	RS232 combined with external power supply

Standard delivery

- Main unit
- Button batteries
- Test block
- Carrying case
- Certificate
- Manual

Optional accessories

- Operation stand
- Communication cable
- Software

DIGITAL SHORE SCALE "D" DUROMETER CV-DSDS001

Handheld digital durometer for Shore D hardness testing

- Testing rubber, plastic, leather and all other soft materials
- Fast and easy to read
- Large digital display, digits 8mm high
- Portable
- Use by hand or mounted on a stand
- Available in Shore D
- Supplied with a reference block
- Data output for SPC
- Power on/off automatic
- Electronic module protection to IP65, even with data output
- Can be used in conjunction with Shore bench stand



Technical specifications

Scale	Shore D
Resolution	0.1
Standards	Conforms to DIN 53 505, ASTM D2240 and ISO R/868
Range	0-100
Pressure foot	∅ 18mm
Indenter	Sharp point
Tip angle	30°
Indenter diameter	1.25mm
Battery	Lithium 3V, CR2032
Data output	RS232 combined with external power supply

Standard delivery

- Main unit
- Button batteries
- Test block
- Carrying case
- Certificate
- Manual

Optional accessories

- Operation stand
- Communication cable
- Software



Instruments



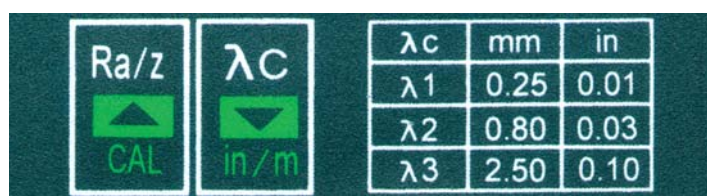
HARDNESS TESTERS - DUROMETERS - SURFACE FINISH TESTERS
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

visit www.cvinstruments.com

SURFACE ROUGHNESS TESTER TR-100™

Handheld surface roughness tester for external surfaces and grooves

- Pocket-sized and economically priced!
- Both Ra and Rz parameters in one instrument
- Software calibration
- Rechargeable batteries
- Large measuring range suitable for most materials
- Piëzo-electric pick-up stylus for external surfaces



Technical specifications

Roughness parameter	Ra, Rz
Units	μm / μinch
Measuring range	Ra: 0.05-15.0μm / Rz: 0.1-50μm
Cut-off lengths	0.25mm, 0.8mm, 2.5mm
Filter	2CR
Calibration	By CAL function (on keypad)
Min. curvature of cylindrical surface	40mm diameter (V-grooved base)
Tracing length	6mm
Tracing speed	1.0mm/sec
Accuracy	Conforms to ISO Class 3
Pick-up stylus	Piëzo-electric
Tracer tip	Diamond, radius 5μm ± 1μm
Operating temperature	0°C - 40°C
Power	3.6V / 2xNiMH-batteries / low battery indication
Charger	9V DC (rechargeable while working)
Dimensions	125mm x 73mm x 26mm
Weight	200gr

Standard delivery

- Main unit
- Protection cover for tracer
- Roughness test plate Ra
- Soft bag
- Charger
- Carrying case
- Manual
- Certificate

Optional accessories

- UKAS certified roughness test plates

SURFACE ROUGHNESS TESTER TR-110™

Handheld surface roughness tester for external surfaces and grooves

- LCD with back-light
- Dynamic test display: progress of cut-off length during testing
- Li-ion rechargeable battery
- Protection slide on pick-up
- Auto-off after 90 seconds
- Sound signal start-test-ready
- Pocket-sized and economically priced!
- Both Ra and Rz parameters in one instrument
- Software calibration
- Large measuring range suitable for most materials
- Piëzo-electric pick-up stylus for external surfaces



Technical specifications

Roughness parameter	Ra, Rz
Units	μm / μinch
Measuring range	Ra: 0.05-15.0μm / Rz: 0.1-50μm
Cut-off lengths	0.25mm, 0.8mm, 2.5mm
Filter	2CR
Functions	Dynamic display during testing, sound signal start-test-ready, auto-off 90 seconds, back-light LCD
Calibration	By CAL function
Min. curvature of cylindrical surface	40mm diameter (V-grooved base)
Tracing length	6mm
Tracing speed	1.0mm/sec
Accuracy	Conforms to ISO Class 3
Pick-up stylus	Piëzo-electric
Tracer tip	Diamond, radius 5μm
Operating temperature	0°C - 40°C
Power	3.6 V / Li-ion batteries / low battery indication
Charger	6V DC
Dimensions	110mm x 70mm x 24mm
Weight	200gr

Standard delivery

- Main unit
- Protection cover for tracer
- Roughness test plate Ra
- Charger
- Soft bag
- Carrying case
- Manual
- Certificate

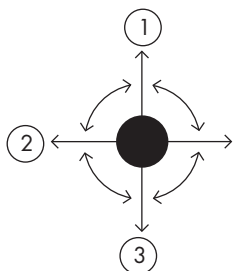
Optional accessories

- UKAS certified roughness test plates

SURFACE ROUGHNESS TESTER CV-R130/R135™

Handheld surface roughness tester for external surfaces and grooves

- Pocket-sized and economically priced!
- External and internal finish testing with swivable tracer
- Ra and Rz parameters in one instrument and all available after each individual test
- Standard 9V battery
- Standard cut-off 0.8mm, adjustable to 1-3-5 times
- Piezo-electric pick-up stylus for external surfaces with diamond tip of 2 micron according to the latest ISO standards
- CV-R135 with data output



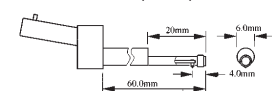
The CV-R130/R135 is a portable, battery-powered instrument for checking surface roughness, with the measured values displayed on a digital readout display. The instrument can be used in laboratory, inspection area, workshop, or wherever on-site surface roughness testing is required



Standard probe for most applications



Small bore probe, minimum inside diameter 5.0mm, up to depth of 15.0mm



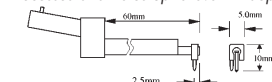
Transverse chisel probe for gaging sharp edges or small O.D., aligned to axis of traverse



Parallel chisel probe for gaging sharp edges or small O.D., perpendicular for axis of traverse



Groove bottom probe for measuring the bottoms of O-ring grooves, recesses and holes up to 6.0mm depth



Technical specifications

Measuring ranges	Ra- 0.03µm ~ 6.35µm (1µ"~250µ") Rz- 0.2µm ~ 25.3µm (8µ"~999µ")
Display resolution	0.01µm / 1µ"
Cut-off	0.25mm / 0.001", 2RC filter, select 1-3-5 times 0.8mm / 0.03", 2RC filter, select 1-3-5 times 2.5mm / 0.01", 2RC filter, select 1 time
Display	3-digit LCD
Accuracy	Meets ISO and DIN standards
Probe Type	Piezoelectric
Maximum stylus force	15.0mN / 1500mgf
Stylus tip radius	Diamond, 2 micron
Power	9-volt alkaline battery
Battery capacity	Approx. 3000 measurements
Output	RS-232 to pc or printer (only CV-R135)

Standard delivery

- Main unit CV-R130/R135
- Protection cover
- Roughness test plate Ra
- Battery 9V standard
- Carrying case
- Manual
- RS232 (only CV-R135)
- CV Instruments certificate

Optional accessories

- Tracers for special applications
- UKAS certified reference standards
- Stand for stable testing
- Mini-printer (R130/4200) with printer cable
- Datacable to MS-Hyperterminal



SURFACE ROUGHNESS TESTER TR-200™

Handheld menu operated surface roughness tester, 13 roughness parameters, graphic display

- High performance instrument
- Easy to operate menu software
- Graphical display on large LCD
- 13 different roughness parameters
- Pick-up stylus position indicator
- Auto-off after 5 minutes, with auto-store
- Selectable language English, German, French, Italian, Spanish and Dutch
- Data output RS-232 to printer TA-220 or PC
- Excellent battery power with Li-ion technology



Technical specifications

Roughness parameter	Ra, Rz, Ry, Rq, Rt, Rp, Rmax, Rv, R3z, RS, RSm, RSk, Rmr, P
Assessed profiles	Primary profile (P), Roughness profile (R), Tp curve (material ratio Mr)
Profile recording magnification	Vv: 200x ~ 20000x, Vh: 20x, 50x, 200x
Standard	Conforms to ISO/DIN/JIS/ANSI (menu selectable)
Measuring system	Metric mm, imperial inch
Display resolution	0.001µm / 0.04 pinch
Display	LCD 128 x 64 dot-matrix, with back-light
Dimensions LCD	50mm x 30mm screen
Display features	Detector stylus position indicator, battery level indicator, direct display of parameters and profiles, direct printing, LCD brightness adjustment, auto-off after 5 minutes with auto-store, calibration through software (each cut-off)
Display languages	English, German, French, Italian, Spanish, Dutch
Data output	RS-232; direct to printer TA-220 or PC
Range	Ra, Rq : 0.005 - 16µm Rz, Ry, Rp, Rt, R3z : 0.02 - 160µm RSm, RS : 2 - 4000µm Tp : 1-100% (% Ry)
Cut-off length	0.25mm / 0.8mm / 2.5mm
Evaluation length Ln	1~5 cut-off
Tracing length Lt	(1~5 cut off) + 2 cut-off
Digital filter	RC, PC-RC, GAUSS, D-P
Detector	Standard model TS-100, Inductive, Diamond tip radius 5µm
Bores from diameter	6.0mm, depth 15mm (TS-100)
Power	Li-ion battery rechargeable
Battery capacity	1000mAh (>3000 measurements)
Charger	220V, 50Hz
Operating temperature	0°C ~ 40°C
Dimensions unit	141mm x 56mm x 48mm
Weight	480gr

Standard delivery

- Main unit
- Detector TS-100
- Roughness test plate Ra
- Protection nose
- Steel support for stand alone use
- Charger 220V, 50Hz
- Screwdriver
- Carrying case
- Data cable
- Manual
- Certificate

Optional accessories

- Special detectors for grooves/small bores; Detector TS-110, detector TS-120
- Extension TSE-A
- Extension TSE-B 90°
- UKAS certified reference standards
- TA-610 test platform
- Steel adapter (ø 8mm)
- Steel adapter for connection to platform TA-610 (L-attachment)
- TA-220 printer

SURFACE ROUGHNESS TESTER TR-200™

Handheld menu operated surface roughness tester, 13 roughness parameters, graphic display

TS-100

Standard pick-up
With skid for finish tests on plane surfaces, shafts and in bores from 5mm diameter. Maximum bore depth 22mm.

TS-110

Pick-up with side skid for finish tests on convex and concave surfaces. Minimum bore diameter 8mm, maximum bore depth 20mm.

TS-120

Pick-up with mini-skid for finish tests for in bores from 2mm. Maximum bore depth 9mm.

TSE-A extension

Extension rod for all pick-ups. Length 50mm. Diameter 10mm.

TSE-B extension 90°

Extension rod with angle 90°, to create a configuration for finish test on for instance crankshafts. Length 70mm x 25mm, diameter 10mm.

TS-100/TS-110/TS-120



TSE-A



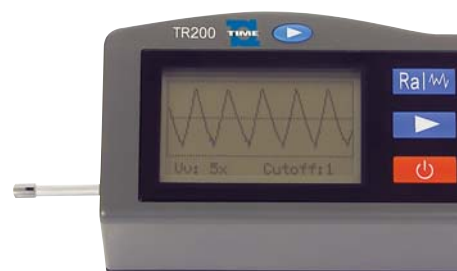
TSE-B



Initial display



Finish parameter display



Finish profile display



Material bearing ratio curve display



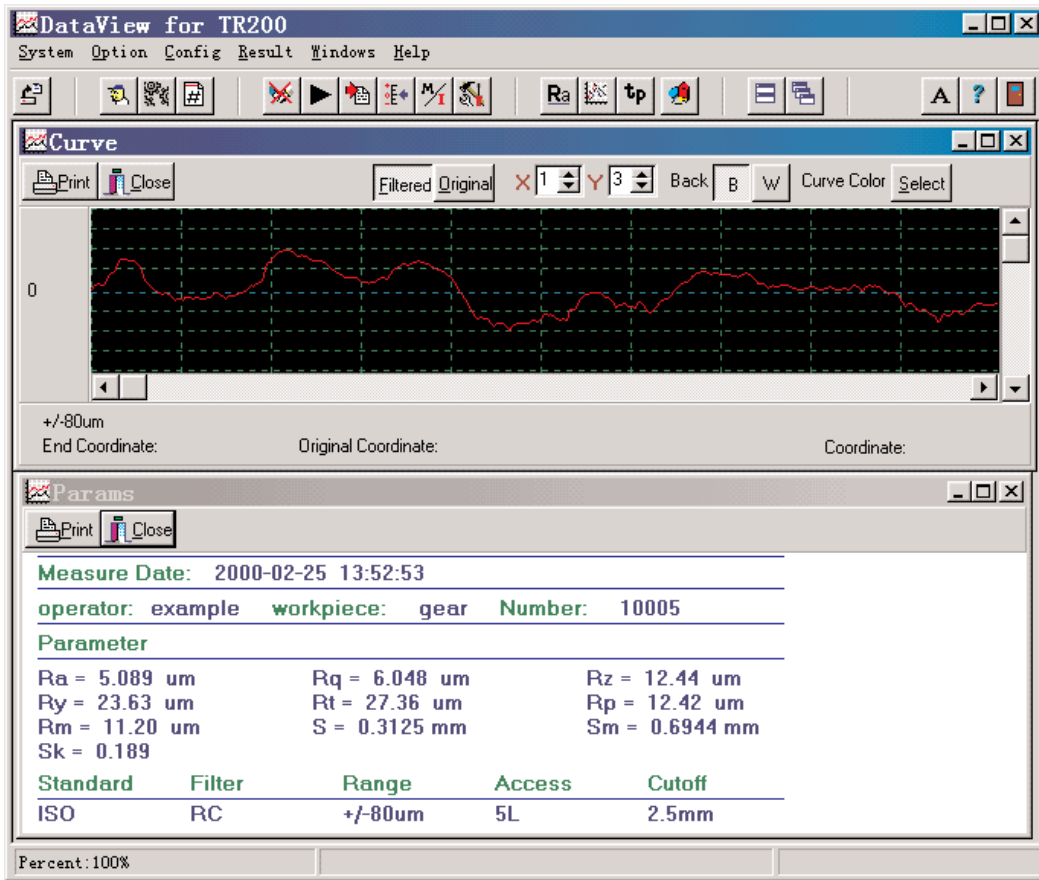
Data output RS-232 and charger input at back side



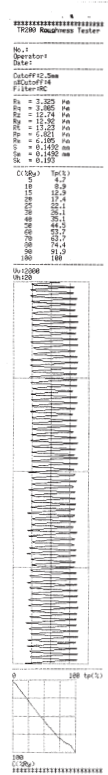
Extra start button easy accessible for hand held operation

SURFACE ROUGHNESS TESTER TR-200™

Handheld menu operated surface roughness tester, 13 roughness parameters, graphic display



Print of TR-200 by TA-220



Holder for attachment of TR-200/210/220 unit to TA-610 stationary test platform

TA-610
Granite stand



TA-220
Micro printer for TR-200/TR-210/TR-220/TR-300

SURFACE ROUGHNESS TESTER TR-210™

Handheld, simple to operate surface roughness tester, 4 parameters with digital (non-graphic) display

- Easy to use!
- 4 different parameters: Ra, Rz, Ry, Rq
- Optional pick-up for grooves/bores and holes
- Data output RS-232 to printer TA-220S or PC
- Large LCD display
- Auto-off after 5 minutes with auto-store (last reading)
- Memory for 10 readings
- Excellent battery power with Li-ion technology
- Pick-up stylus position indicator



Technical specifications

Parameters	Ra, Rz, Ry, Rq
Standard	Conforms to ISO Class 3
Measuring system	Metric, imperial
Display resolution	0.001μm / 0.04 pinch
Display	LCD dot-matrix, with back-light
Dimensions of LCD	50mm x 30mm screen
Display languages	English
Display features	Pick-up stylus position indicator, Direct display of parameters, Direct printing, Memory for 10 readings, Auto-off after 5 minutes with auto-store (last reading), Calibration through software
Data output	RS-232; direct to printer TA-220S or PC
Measuring range	Ra: 0.005-16μm Rz: 0.02-160μm
Cut-off length	0.25mm / 0.8mm / 2.5mm
Tracing length	5 cut-off
Digital filter	RC, PC-RC, GAUSS, D-P
Pick-up	Standard model TS-100, inductive, Diamond tip radius 5μm
Bores from diameter	6.0mm, depth 15mm (TS-100)
Power	Li-ion battery rechargeable
Charger	220V, 50Hz
Working temperature	0°C - 40°C
Dimensions	140mm x 52mm x 48mm
Weight	440gr

Standard delivery

- Main unit
- Protection nose
- Pick-up TS-100
- Roughness test plate Ra
- Steel support for stand alone use
- Charger 220V, 50Hz
- Screwdriver
- Manual
- Certificate
- Carrying case

Optional accessories

- Special pick-ups for grooves/small bores; Pick-up TS-110, pick-up TS-120
- Test platform TA-610
- TA-220S printer
- Extension TSE-A
- Extension TSE-B 90°
- Dataview software with cable

SURFACE ROUGHNESS TESTER TR-220™

Advanced handheld, menu operated surface roughness tester, 19 roughness parameters and with graphic display

- Very complete instrument!
- 19 different parameters
- Pick-up stylus position indicator
- Data output RS-232 to printer TA-220S or PC
- Excellent battery power with Li-ion technology
- Conforms to ISO
- Memory for 15 readings including profiles
- Optional pick-up for grooves/bores and holes



Technical specifications

Parameters	Ra, Rq, Rz, Rt, Rp, Rv, Ry, RS, RSm, RSk, Rz (JIS), R3z, Rmax, R _{Pc} , Rk, R _{pk} , R _{vk} , Mr1, and Mr2
Assessed profiles	Finish profile (R)
Measuring system	Metric, imperial
Display resolution	0.001µm / 0.04 pinch
Display	LCD 128x64 dot-matrix, with back-light
Dimensions of LCD	50mm x 30mm screen
Display languages	English
Display features	Pick-up stylus position indicator, Direct display of parameters, Direct printing, memory for 15 readings, Auto-off after 5 minutes with auto-store (last reading), Calibration through software
Data output	RS-232; direct to printer TA-220S or PC
Measuring range	Ra: 0.005-16µm Rz: 0.02-160µm
Cutoff length	0.25mm / 0.8mm 2.5mm
Tracing length	1~5 cut-off (selectable)
Digital filter	RC, PC- RC, Gauss, D-P
Pick-up	Standard model TS100, inductive, Diamond tip radius 5µm
Bores from diameter	6.0mm, depth 15mm (TS-100)
Power	Li-ion battery rechargeable
Charger	220V, 20Hz
Working temperature	0°C - 40°C
Relative humidity	<80%
Operating temperature	-25°C - 60°C
Ventilation	Grade 3
Dimensions	140mm x 52mm x 48mm
Weight	440gr

Standard delivery

- Main unit TR-220
- Pick-up jacket
- Pick-up TS-100
- Roughness test plate Ra
- Steel support for stand alone use
- Charger 220V, 50Hz
- Screwdriver
- Manual
- Certificate
- Carrying case

Optional accessories

- Special pick-ups for grooves/small bores; Pick-up TS-110, pick-up TS-120
- Test platform TA-610
- TA-220S printer
- Extension TSE-A
- Extension TSE-B 90°
- Dataview software with cable

SURFACE FINISH TESTER TR-300™

Handheld menu operated surface tester, also measures waviness and primary profile

- Integrated design for convenient using
- Testing of roughness, waviness and primary profile
- Large measuring scale and multi-parameters
- LCD, digital/graphic display
- Compatible with Multi-Standards
- Measuring with or without inductive skid
- Can be equipped with advanced Windows software
- Communication with PC and printer is available



Technical specifications

Measuring profile	Roughness, Waviness, Primary profile
Parameters	<p>R: Ra, Rp, Rv, Rt, Rz, Rq, RSk, Rku, Rc, RS, RSm, Rlo, RHSC, RPc, Rmr(c), RzJIS, R3y, R3z</p> <p>W: Wa, Wp, Wv, Wt, Wz, Wq, WSk, Wku, Wc, WS, WSm, Wlo, WHSC, Wpc, Wmr(c), WzJIS</p> <p>P: Pa, Pp, Pv, Pt, Pz, Pq, PSk, Pku, Pc, PS, PSm, Plo, PHSC, Ppc, Pmr(c), PzJIS</p> <p>Rk: Rk, Rpk, Rvk, Mr1, Mr2</p>
Filtering	RC, PCRC, Gauss
Cutoff length	0.08mm, 0.25mm, 0.8mm, 2.5mm, 8mm
Evaluation length	1-5
Resolution	0.0001µm/8µm
Memory	10 groups of primary data
Communication	RS232, USB
Power supply	Li battery and charger available

Standard delivery

- Main unit TR-300
- Standard pick-up
- Fine adjustment
- Multi-reticle specimen
- Charger
- Manual
- Certificate
- Carrying case

Optional accessories

- Special detectors for grooves/small bores; Detector TS-110, detector TS-120
- Test platform
- TA-220S printer
- Extension TSE-A
- Extension TSE-B 90°
- Dataview software with cable

The image features a white microscope with a digital display and a control panel labeled 'QUADRA-CHEK 100'. The microscope is positioned on the left side of the frame, and the control panel is on the right. The background is a blue, abstract pattern of light dots and lines, suggesting a digital or technological environment. The word 'Instruments' is written in a white, serif font at the top center of the image.

Instruments

HARDNESS TESTERS - DUROMETERS - SURFACE FINISH TESTERS
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - **MICROSCOPES** - PROFILE PROJECTORS

visit www.cvinstruments.com

SURFACE FINISH TESTER CV-R190™

Simple to operate, high quality universal surface finish tester

- Simple but high quality universal roughness tester with excellent price/quality rating
- Tester for use in laboratory or production environment
- Multiple styli available;
standard delivery with long and short stylus
- Additional roughness parameters available on request
- Conforms to international standards ISO, DIN, ASME, JIS



Technical specifications

Measuring System	Skidless method using inductive pick-up with interchangeable stylus
Measurement parameter	Ra; Rz; Rt; Rp; Rv; Rq; RSm; RmaxD; Material ratio curve
Measurable roughness range	Ra 0.01~10um
Cut off (L)	0.08mm; 0.25mm; 0.8mm; 2.5mm
Evaluation length (LN)	1L; 2L; 3L; 4L; 5L
Filter	
Measuring length	Horizontal 60mm (vertical 0,6mm / 600um)
Resolution	0,001um
Indication error	Not greater than 6% ±0,004um
Tracing speed	0,5mm/sec
Stylus	R= 2um
Stylus force	0.7mN
Stylus 1 (standard)	For roughness test on plane and round surfaces and in bores from 10mm diameter, max bore depth= 18mm
Stylus 2	For roughness test on plane surfaces, and in bores from 4mm diameter, max. bore depth= 15mm
Worktable	
Rotation range	360°C
Inclination range	±10°C
X - Y range	15mm
Unit height:	115mm
Tracer unit	
Tracer height from granite surface	Min:100mm - max:380mm
Inclination	±10°C
Dimensions	
Granite base	630mm x 400mm x 100mm
Column height	500mm
Control box	360mm x 100mm x 80mm
Power supply	220V 50Hz

Standard delivery

- Main unit
- Tracer unit including 2 styli
- Granite base including column
- Universal worktable
- Control box and drive box
- Standard roughness plate
- V-block large
(90mm x 60mm x 40mm 45°)
from 4mm - 60mm
- V-block small
(40mm x 30mm x 20mm 45°)
from 2mm - 20mm incl. magnetic surface
- PCI i/o controller including software and wires
- CV Instruments certificate
- Installation & user manual

Optional accessories

- Various styli for different applications
- Additional roughness parameters

Optional

- Pentium 4 english workstation with hardware and software pre installed

SURFACE FINISH TESTER CV-SE1200™

Instrument for laboratory or production

- Instrument for laboratory or production
- Wide range of pick-ups with interchangeable styli
- Wide range of finish parameters
- Measurement length 0.08mm to 25mm
- Conforms to international standards ISO, DIN, ASME, JIS
- Right angle measurement available for crankshaft
- Waviness measurement based on ISO standard
- Preset of 9 measuring conditions
- Internal thermal printer
- Quick rechargeable battery pack
- Statistics output
- RS-232C output



Technical specifications

Measuring system	Skidless/Skidded method using inductive (LVDT) Pick-Up with interchangeable styli
Measurement parameter	Ra, Rz, tp, Sm, Rt, Rp, Rv, Pc, HSC, Ra/RMS, RmaxD, R3Z, Rmax, RSm, Rmr(c), Rdc, Rsk, Rku, Rk, Mr1, Mr2, Rpk, Rvk, A1, A2, Pa, Pz, Pp, Pv, Pq, RSm, Pmr(c), Pdc, Pt, Pak, Pku, Wa, Wz, Wp, Wv, Wq, Wsm, Wmr(c), Wdc, Wt, BAC, ADC, P/R/W profile
Display	Graphic LCD
Filter	Gauss, 2RC, ISO13565-1 (DIN4776)
Cut-off	λ_c 0.08, 0.25, 0.8, 2.5, R+W λ_s ISO3274(96) / ISO97 λ_c - λ_f 0.08-0.8, 0.25-0.5, 0.8-8mm
Measuring length	25mm
Evaluation length	$\lambda_c \times 1, 2, 3, 4, 5$ / arbitrary 0.08mm~16mm
Vertical magnification	50~100000 (11 steps) / Auto
Horizontal magnification	1~1000 (10 steps), 25mm/ λ_c , 50mm/ λ_c
Straightness accuracy	0.8 μ m / 10mm
Measuring range/resolution	520 μ m / 0.008 μ m
Stylus/skid	R5 μ m Diamond / R40mm Sapphire
Force	4.0 mN
Function	9 Measuring condition memory, Multi standard analysis, Profile invert, 99 data SPC, PC linking software
Data output	RS-232C
Printer	Internal thermal printer, 8dots / 1mm
Power Supply	Ni-H battery pack, 6 hours continuous operation, 100 - 240 Volts with AC adapter
Weight	Amplifier 1.8kg, Drive unit 0.7kg

Standard delivery

- Amplifier controller unit
- Drive unit
- Internal thermal printer
- Printer paper
- Nose piece ANA
- Stylus arm AA5
- Pick-up body PU-A
- Calibration specimen Ra
- Rechargeable battery pack
- Manual
- CV Instruments certificate

Optional accessories

- Pick-ups with interchangeable styli, see next pages
- UKAS certified roughness reference standards
- Attachment for roll measurement FT-22 (>60mm)
- Extended cable, length 2m drive unit can be apart from amplifier (3.5m)
- RS-232 cable, length 1.5m
- Carrying handle for back side controller unit
- Spare battery pack
- Carrying case

SURFACE FINISH TESTER CV-SE1200™

Instrument for laboratory or production

Accuracy of straightness

CV-SE1200 guarantees the accuracy of straightness $0.8\mu\text{m} / 100\text{mm}$ in drive unit



Correcting rounded profile to straight profile

CV-SE1200 will correct rounded profile to straight profile and then calculate, enabling correct measurement



Right angle measurement

CV-SE1200 can attach slider at right angles and measure components such as crankshafts, etc.



Skidless measurement

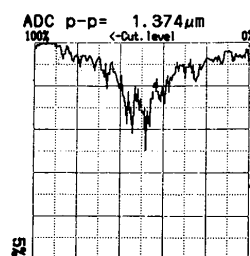
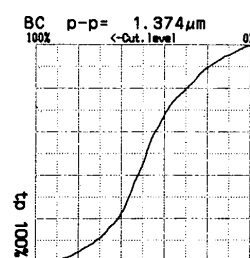
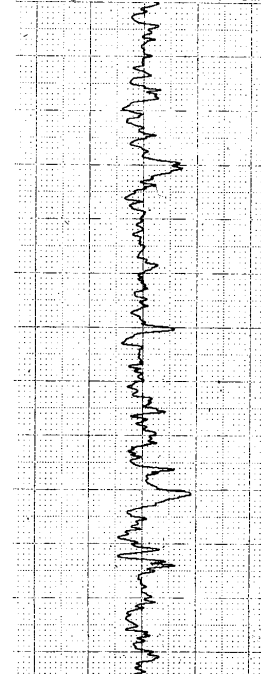
Both skid and skidless measurements are possible and can also measure short length, narrow, small, deep or rounded surface in skidless mode



Standard	JIS94
Cutoff	0.25mm
Filter	Gauss
S.Length	0.25mm
E.Length	1.25mm
Levelling	All
M-Speed	0.20mm/s

Ra	0.159 μm
Ry	1.057 μm
Sm	0.095mm
Rt	1.381 μm
Rp	0.640 μm
Rv	0.417 μm
Rq	0.215 μm

R-Prof.
V. Mag: 10000 1.0 $\mu\text{m}/10\text{mm}$
H. Mag: 100 0.1mm/10mm



SURFACE FINISH TESTER CV-SE1700A™

Compact multi-function surface finish and form measuring instrument

- Instrument for laboratory or production use
- Surface roughness, waviness, straightness and form
- Wide range of pick-ups with interchangeable styli
- Wide range of roughness parameters
- Measurement length 0.08mm to 30mm
- Conforms to international standards ISO, DIN, ASME, JIS
- Waviness measurement based on ISO standard
- Quick rechargeable battery pack
- Statistics output
- RS-232C output



Technical specifications

Measuring system	Skidless/Skidded method using inductive (LVDT) Pick-Up. with interchangeable styli
Measurement parameter	Ra, Rz, tp, Sm, Rt, Rp, Rv, Pc, HSC, Ra/RMS, RmaxD, R3Z, Rmax, RSm, Rmr(c), Rdc, Rsk, Rku, Rk, Mr1, Mr2, Rpk, Rvk, A1, A2, Pa, Pz, Pp, Pv, Pq, RSm, Pmr(c), Pdc, Pt, Pak, Pku, Wa, Wz, Wp, Wv, Wq, Wsm, Wmr(c), Wdc, Wt, BAC, ADC, P/R/W profile
Display	Touch screen LCD
Filter	Gauss, 2RC, ISO13565-1 (DIN4776), special Gauss
Profile	Un-filtered, filtered (roughness), filtered (centre-line) waviness
Cut-off	λ_c 0.08, 0.25, 0.8, 2.5, R+W λ_s ISO3274(96) / ISO97 λ_c - λ_f 0.08-0.8, 0.25-0.5, 0.8-8mm
Measuring length	30mm
Evaluation length	$\lambda_c \times 1, 2, 3, 4, 5$ / arbitrary 0.08~16mm
Vertical magnification	50~100000 (11 steps) / Auto
Horizontal magnification	1~1000 (10 steps), 25mm/ λ_c , 50mm/ λ_c
Straightness accuracy	0.3 μ m / 30mm
Measuring range/resolution	800 μ m / 0.0005 μ m
Stylus/skid	R2 μ m Diamond / R40mm Sapphire
Force	0.7mN
Function	Leveling support, Multi standard analysis, Touch panel, 99 data SPC, PC linking software
Memory	2 sets of data (optional: 16 sets of measurement conditions)
Data output	RS-232C
Power Supply	Ni-H battery pack, 100 - 240 V with AC adapter
Weight	Amplifier 4.5kg, Drive unit 0.9kg

Standard delivery

- Amplifier controller unit
- Drive unit
- Calibration specimen Ra
- Nose piece ANA
- Stylus arm AA2
- Pick-up body PU-A2
- Manual
- CV Instruments certificate

Optional accessories

- Pick-ups with interchangeable styli, see next pages
- Memory card for storage of 16 sets of measuring conditions
- UKAS certified roughness reference standards
- Attachment for roll measurement FT-22 (>60mm)
- Extension cable, length 2m
Drive unit can be apart from amplifier (3.5m)
- RS-232 cable, length 1.5m
- Carrying handle for back side controller unit
- Battery pack for reserve purpose
- Carrying case

SURFACE FINISH TESTER CV-SE1700A™

Compact multi-function surface finish and form measuring instrument

Display and touch control panel

The unique display and touch control panel is very user friendly, even without an instruction manual. The opening of individual windows by touching the panel makes selection of all measurement conditions, parameters and data required for records a simple operation.

No instruction manual required, simply open a "window" and select, input or change the data.

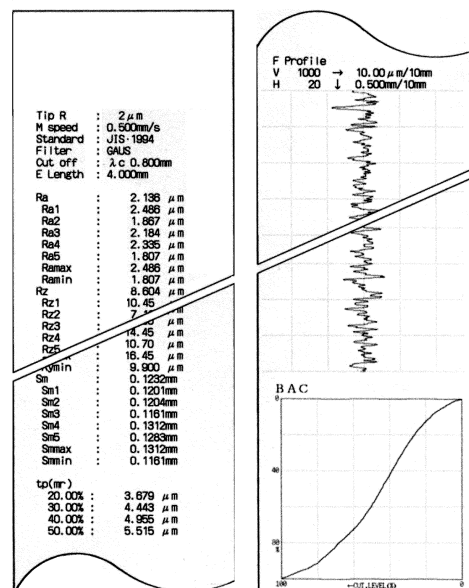
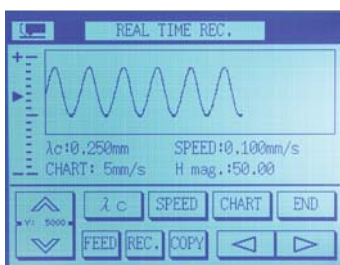


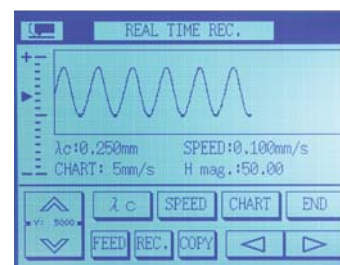
Chart data outputs



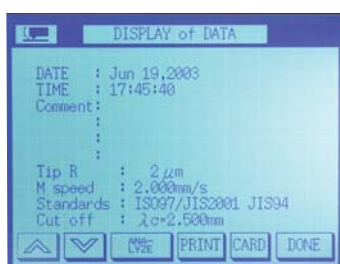
Real time profile recording



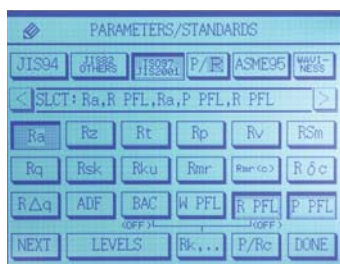
Measurement display



Real time rec.



Display of all measuring conditions



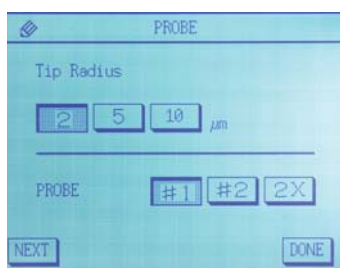
Parameter selection



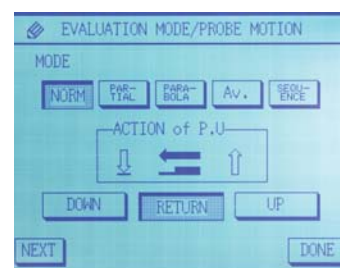
Magnification settings



Cut-off/Filter settings



Probe



Mode selection

SURFACE FINISH TESTER CV-SE3500™

PC controlled surface finish and form measuring instrument

- Surface finish, waviness, straightness and form
- Wide range of pick-ups with interchangeable styli
- Wide range of finish parameters
- Measurement length 0.08mm to 100mm
- Conforms to international standards ISO, DIN, ASME, JIS
- Waviness measurement based on ISO standard

This system can be upgraded with functions for contour and form measurement



Technical specifications

Measuring system	Stylus method using inductive (LVDT) pick-up
Measurement parameter	Ra (Ra75), Rq, Ry, Rmax, Rt, Rz, Rz5, Rz3, R3z, R3zmax, RzmaxD, RzD, Sk, Ku, Pc, HSC, PPI, Rpm, Si, Sm, S, Rp, Rv, θa, θq, Δa, Δq, λa, λq, K, tp, BC, ADC, FFT, Rk, Rpk, Rvk, Mr1, Mr2, Wca, Wcm, Wea, Wem, Straightness, Gap, Coordinates
Measuring range	Vertical 50, 100, 200, 500, 1000, 2000, 5000, 10000, 20000, 50000, 100000, 200000, 500000 Horizontal 1, 2, 5, 10, 100, 200, 500, 1000, 2000, 5000
Measuring range	Vertical: 600 μm, Horizontal: 100mm
Evaluation length	0.25, 0.8, 2.5, 8, 25, 80mm/λc x 1, 2, 3, 4, 5
Traverse speed	0.05, 0.1, 0.2, 0.5, 1, 2mm/sec at measuring, 5, 10mm/sec
Cut off	Finish 0.08, 0.25, 0.8, 2.5, 8mm and un-filtered Waviness f _t 0.8, 2.5, 8, 25mm f _h 0.08, 0.25, 0.8, 2.5mm
Filter	Gaussian/2CR/Special Gaussian
Sampling number/resolution	Max 32000 points/16 bit
Auto levelling	Least square method, 2 points method, R curve correction, quadratic curve correction
Auxiliary function	Recording of deliberate layout, chart template, mean processing, statistical processing, discontinued measurement, recomputing, resistration of pick-up, recording of comments, calibration of automatic sensitivity, unit changeover between mm/inch, automatic measurement, notch processing, changing of profile size
Bed with column	Bed 600mm x 315mm, maximum load 70kg, auto down stop accuracy ±0.2μm at x100,000 (when using a skid), range of up and down movement of pick-up 250mm
Leveling stand	160mm x 50mm, with V-Shape groove (to the measuring direction), rotation ±3°, vertical tilt ±3°, Y-axis feed ±3mm
Drive unit	Straightness accuracy 0.2μm/100mm ³
Pick up	R2μm, 0.7mN, Diamond
Dimensions	Measurement section 600mm x 400mm x 593mm, 80kg, Computing section 900mm x 600mm x 520mm, 30kg
Power supply	AC90~120V, 50/60Hz, 800VA

Standard delivery

- Pick-up
- Drive unit
- Bed with column
- Remote controller
- Leveling stand
- Controller
- Calibration specimen Ra
- Manual
- CV Instruments certificate

Optional accessories

- PC with monitor
- Pick-ups with interchangeable styli, see following pages
- UKAS certified finish reference standards
- Laser printer

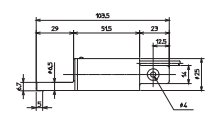
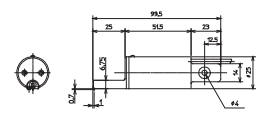
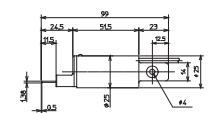
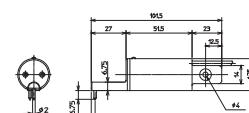
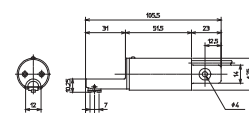
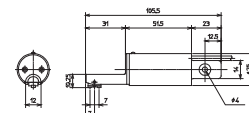
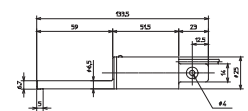
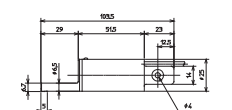
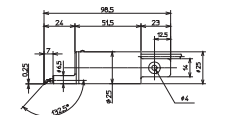
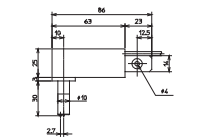
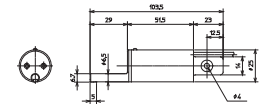
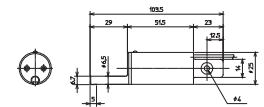
SURFACE FINISH PICK-UPS

D-series for CV-SE3500 (not exchangeable)

Finish pick-ups

High dynamic performance type

Type:	General use	Radius	Force	Range	Size
PU-DA5/PUDA5S	Normal bore	5 μ m	4mN	600 μ m	
Type:	Knife edge	Radius	Force	Range	Size
PU-DC5/PU-DC5S	Very small wires	5 μ m	4mN	600 μ m	
Type:	Bottom of hole and groove	Radius	Force	Range	Size
PU-DE10/PU-DE10S (PU-DF10: Kow Mag.)		10 μ m	1.6mN	600 μ m	
Type:	Screw thread	Radius	Force	Range	Size
PU-DH10/PU-DH10S		10 μ m	4mN	600 μ m	
Type:	Low meas. force softer materials	Radius	Force	Range	Size
PU-DJ2/PU-DJ2S (PU-DJ2U: Low force)		2 μ m	0.7mN (0.3mN)	600 μ m	
Type:	Long bore	Radius	Force	Range	Size
PU-DQ10/PU-DQ10S		10 μ m	10mN	1200 μ m	
Type:	Twin-skid swiveling for wavy surface	Radius	Force	Range	Size
(PU-DB5F: All posture)		5 μ m	4mN	600 μ m	
Type:	Crank shaft between flanks	Radius	Force	Range	Size
PU-DD5/PU-DD5S		5 μ m	4mN	600 μ m	
Type:	Curve surface bottom of groove	Radius	Force	Range	Size
PU-DG5/PU-DG5S		5 μ m	4mN	600 μ m	
Type:	Small bore	Radius	Force	Range	Size
PU-DI5/PU-DI5S		5 μ m	4mN	600 μ m	
Type:	Corner end	Radius	Force	Range	Size
PU-DK5/PU-DK5S		5 μ m	4mN	600 μ m	
Type:	Waviness	Radius	Force	Range	Size
PU-DW800/PU-DW800S		800 μ m	4mN	600 μ m	



SURFACE FINISH PICK-UPS

A-series for CV-SE1200 and CV-SE1700A and CV-SE3500 (exchangeable)

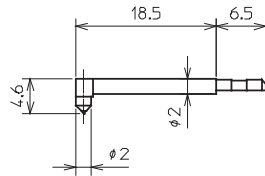
Pick-up body

Type: PU-A (normal force) Pick-up body not including stylus arm and nose piece (CV-SE1200)
 Type: PU-A2 (low force) Pick-up body not including stylus arm and nose piece (CV-SE1700)

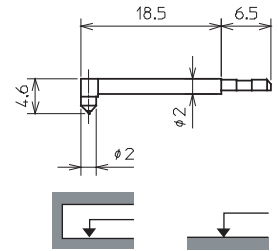
Stylus arms

() = low force to be used with body PU-A2

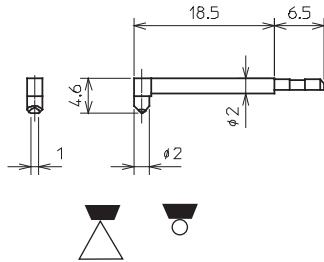
Type: AA2 (CV-SE1700)
 Radius: 2µm
 Force: 4mN (0.7mN)
 Nose pc: ANA/ANH
 Range: 600µm
 Use: General use
 Normal bore



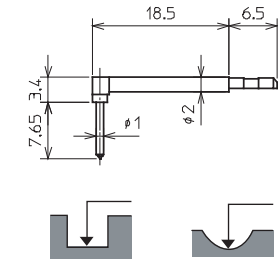
Type: AA5 (CV-SE1200)
 Radius: 5µm
 Force: 4mN (0.7mN)
 Nose pc: ANA/ANH
 Range: 600µm
 Use: General use
 Normal bore



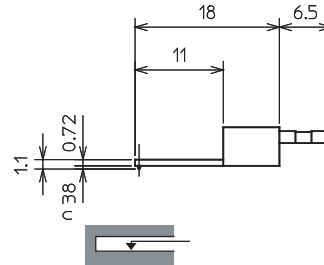
Type: AC5
 Radius: 5µm
 Force: 4mN (0.7mN)
 Nose pc: ANA/ANH
 Range: 600µm
 Use: Knife edge
 Very small wire



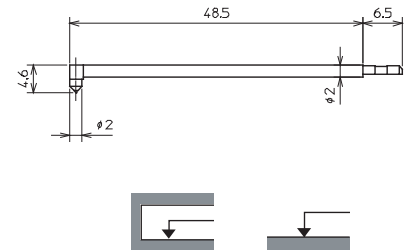
Type: AG5
 Radius: 5µm
 Force: 4mN (0.7mN)
 Nose pc: ANG/ANH
 Range: 600µm
 Use: Curve surface
 Deep grooves



Type: AI5
 Radius: 5µm
 Force: 4mN (0.7mN)
 Nose pc: ANH
 Range: 600µm
 Use: Small bore

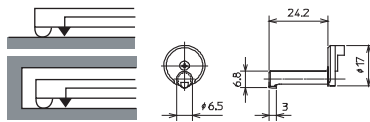


Type: AL10
 Radius: 5µm
 Force: 8mN (5mN)
 Nose pc: ANL/ANH
 Range: 1200µm
 Use: Long bore

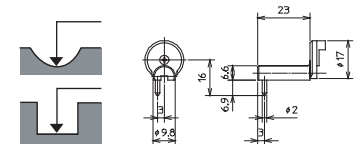


Nose pieces

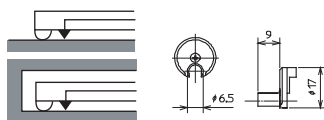
Type: ANA
 R40mmxR2mm
 Skid
 General use



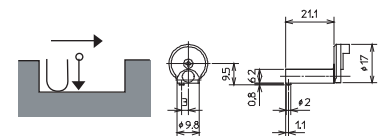
Type: ANG
 R0.5mm Skid
 Curve/Groove



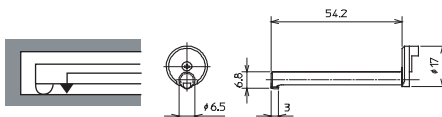
Type: ANH
 Skidless
 measurement
 without Skid



Type: ANK
 R40mm Skid
 Corner end



Type: ANL
 R40mmxR2mm
 Skid
 Long bore



CONTOUR MEASUREMENT SYSTEM CV-EF150E/EF150ED™

Contour and form measuring system

- High-end contour and form measuring system
- Pick up/down range 200mm manual (CV-EF150E)
Pick up/down range 200mm motorized (CV-EF150ED)
- Digital error compensation to compensate stylus arc movement
- 45° tilting mechanism
- Synchronization control between pick-up movement and recorder
- Selectable measuring direction to save workpiece setting time
- Thickness and comparative measurements can be easily done
- Perfect safety and warning functions such as:
stylus slowdown mechanism, overload stopping function, upper-limit warning buzzer



Technical specifications

Accuracy	Z : 0.1%/5mm, X : 0.2%/5mm
Measuring range	Z: 50mm, X:100mm
Resolution	0.1µm in X axis
Display magnification	1 to 200x in both Z and X axis (up to 2.000 times optional)
Drive speed	0.02mm to 5mm/s at measuring, 0.02mm to 10mm/s at returning
Straightness accuracy	1µm/100mm
Pick up	Stylus R25µm, tungsten carbide
Measuring force	10mN to 30mN (adjustable)
Traceable angle	Ascend: 77 degrees (smooth surface), descend: 87 degrees
Measuring direction	Both upward and downward, both forward and backward
Pick up/down range	200mm manual (EF-150ED: 200mm motorized)
Dimensions measuring part	640mm x 685mm x 315mm, 70kg
Dimensions amplifier	436mm x 387mm x 150mm, 10kg
Dimensions PC and printer part	650mm x 500mm x 550mm, 30kg for reference
Operation conditions	10°C to 30°C / 80% or less
Power supply	AC100V 50/60Hz 500VA including 300VA for PC and printer
Data correct functions	Alignment function (data point movement, rotation, reverse), linkage function, stylus curvature radius correction, stylus arm arc error correction, best fit function
Analysis items	Element analysis (point, line, circle, peak, through, cross point, cross line, contact point), scaler analysis (coordination distance, cross angle, distance, radius), ball screw analysis, master comparison analysis, inspherical surface analysis
Measuring support functions	Macro function, auto measuring function
Auxiliary functions	Free layout edit, vibrator, measuring range limitation, overload stop, up/downward measuring, over scale warning

Standard delivery

- Bed with column
- Drive unit
- Pick-up (standard PU/FG25 with stylus arm SB-609)
- Amplifier
- Contour analysing software
- Calibration specimen
- CV Instruments certificate
- Manual

Optional accessories

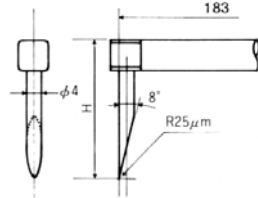
- PC with monitor
- Contour pick-up series and styli and stylus arms (see next pages)

PICK-UPS FOR CONTOUR MEASUREMENT

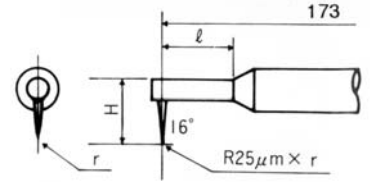
For series CV-EF150E/CV-EF150ED

Stylus arms

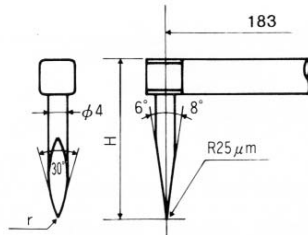
Type: Chisel type
SB-609



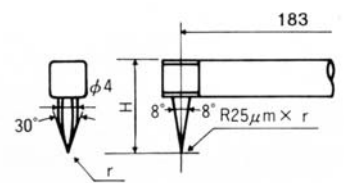
Type: Small hole type
SB-7, 8, 9, 10



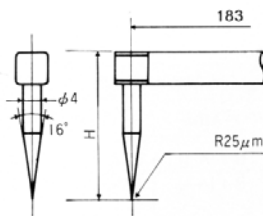
Type: Axe type
SB-1A,4



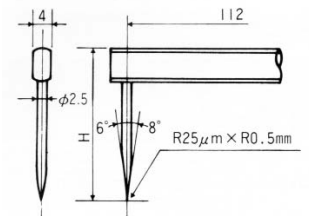
Type: Small hole B- type
SB-11,12



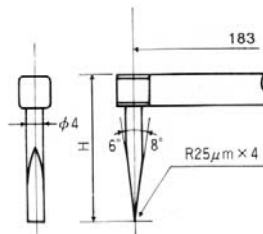
Type: Conical type
SB-2A,17,5,18



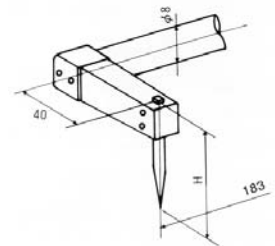
Type: Narrow groove type
SB-13,14



Type: Knife-edge type
SB-3A,6

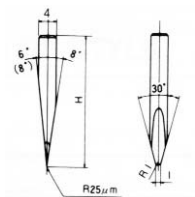


Type: Crank type
SB-15A,18

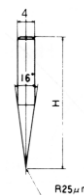


Stylus forms

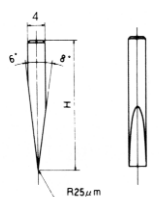
Type: Standard styli
S-1B H=29mm
S-4 H=50mm



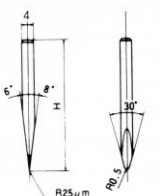
Type: Standard styli
S-1B H=29mm
S-4 H=50mm



Type: Knife-edge styli
S-3B H=29mm
S-6 H=50mm

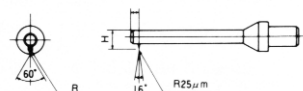
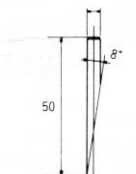


Type: Styli for narrow groove (styli for holes)
S-13 H=22.5mm
S-44 H=30mm



Type: Styli for small holes
S-7 H=2mm, R0.2mm
S-8 H=3.5mm, R0.2mm
S-9 H=5.6mm, R0.5mm
S-10 H=8.5mm, R0.5mm
S-11 H=13mm, R0.5mm
S-12 H=21.5mm, R0.5mm

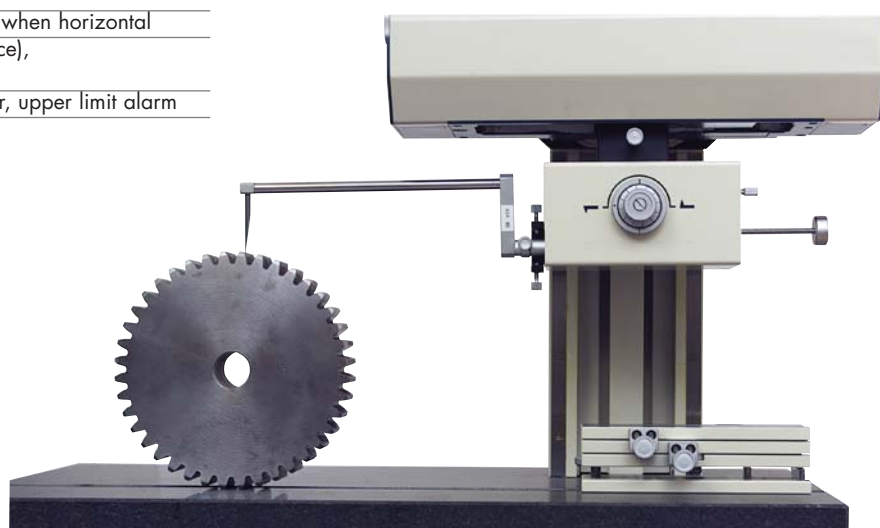
Type: Standard offset styli
S-609



STYLI AND STYLUS ARMS FOR CONTOUR MEASUREMENT

For series CV-EF150E/EF150ED

Item	PU-FG25
Sensor	Differential transformer
Measuring range	50mm
Measuring force	10 to 30mN (1 gf to 3 gf) when horizontal
Stylus traceable angle	Ascend: 77° (smooth surface), Descend 87°
Auxiliary function	Vibrator, overload protector, upper limit alarm



Applied pick-ups

Type	Name	Combination				Specifications	
		Arm	Stylus	Measurement depth	R(mm)	Material	Others
SB-1A (SA-1A)	Standard stylus arm	B-1 (A-1)	S-1A	21 (20)	0.025	Carbide	
SB-2A (SA-2A)	Conical stylus arm	B-1 (A-1)	S-2A (S-17A)	21 (20)	0.025	Sapphire (carbide)	
SB-3A (SA-3A)	Knife stylus arm	B-1 (A-1)	S-3A	21 (20)	0.025	Carbide	
SB-4A (SA-4A)	Standard stylus arm for large step	B-2 (A-2)	S-4	42 (40)	0.025	Carbide	CVEF150 series standard
SB-609 (SA-609)	Standard offset stylus arm	B-609 (A-609)	S-609	42 (40)	0.025	Carbide	CVEF150 series standard
SB-5 (SA-5)	Conical stylus arm for large step	B-2 (A-2)	S-5 (S-18)	42 (40)	0.025	Sapphire (carbide)	
SB-6 (SA-6)	Knife stylus arm for large step	B-2 (A-2)	S-6	42 (40)	0.025	Carbide	
SB-7 (SA-7)	2.5 stylus arm	B-3 (A-3)	S-7	0.4	0.025	Carbide more	Hole diameter ϕ 2.5mm or more
SB-8 (SA-8)	4 stylus arm	B-4 (A-4)	S-8	1	0.025	Carbide	Hole diameter ϕ 4mm or more
SB-9 (SA-9)	6.3 stylus arm	B-5 (A-5)	S-9	1.6	0.025	Carbide	Hole diameter ϕ 6.3mm or more
SB-10 (SA-10)	10 stylus arm	B-6 (A-6)	S-10	2.5	0.025	Carbide	Hole diameter ϕ 10mm or more
SB-11 (SA-11)	16 stylus arm	B-7 (A-7)	S-11	5	0.025	Carbide	Hole diameter ϕ 16mm or more
SB-12 (SA-12)	25 stylus arm	B-8 (A-8)	S-12	13.5	0.025	Carbide	Hole diameter ϕ 25mm or more
SB-13 (SA-13)	Stylus arm for narrow grooves	B-9 (A-9)	S-13	12.5	0.025	Carbide	Groove width 4.5mm or more
SB-14 (SA-14)	Stylus arm for narrow grooves	B-10 (A-10)	S-14	20	0.025	Carbide	Groove width 4.5mm or more
SB-15A (SA-15A)	Crank stylus arm	B-11 (A-11)	S-1A	21 (20)	0.025	Carbide	
SB-16 (SA-16)	Crank stylus arm	B-12 (A-12)	S-4	42 (40)	0.025	Carbide	

ROUNDNESS TESTER CV-EC1550™

PC controlled roundness measuring instrument

- Manual centering and tilting support function
- Geometrical features:
Roundness, straightness, cylindricity, spiral cylindricity, co-axiality, concentricity, parallelism, flatness, squareness, circular runout, thickness deviation, radius deviation, knife-edge analysis
- Powerfull data processing software
- Static air bearing
- Very high rotating accuracy of $(0.04+0.0006H)\mu\text{m}$
- Max. workpiece diameter 368mm
- Max. probing height (OD): 420mm for outer diameter
- Max. probing height (ID): 270mm for inner diameter
- 12 interchangeable styli available for all kinds of special applications



ROUNDNESS TESTER CV-EC1600W™

PC controlled roundness measuring instrument

- Manual centering and tilting support function
- Geometrical features:
Roundness, straightness, cylindricity, spiral cylindricity, co-axiality, concentricity, parallelism, flatness, squareness, circular runout, thickness deviation, radius deviation, knife-edge analysis
- Powerfull data processing software
- Static air bearing
- Very high rotating accuracy of $(0.04+0.0005H)\mu\text{m}$
- Max. workpiece diameter 368mm
- Max. probing height (OD): 545mm for outer diameter
- Max. probing height (ID): 320mm for inner diameter
- 12 interchangeable styli available for all kinds of special applications



ROUNDNESS TESTER CV-EC1550/CV-EC1600W™

PC controlled roundness measuring instrument

Technical specifications

Turntable

Rotating method	Static air bearing
Rotating accuracy	(0.04+0.0006H)µm H: Probing height (mm) (CV-EC1550) (0.04+0.0005H)µm H: Probing height (mm) (CV-EC1600W)
Rotating speed	1 to 10rpm (adjustable)
Table size	160mm (CV-EC1550), 180mm (CV-EC1600W)
Centering adjustment range	±2mm
Leveling adjustment range	±1.0°
Min. angle indication	0.1
Max. workpiece load	20kg
Max. workpiece diameter	368mm

Column unit

Straightness	0.6µm/100mm (1.2µm/250mm) (CV-EC1550) 0.4µm/100mm (0.8µm/300mm) (CV-EC1600W)
Parallelism	0.75µm/100mm (1.5µm/200mm) (CV-EC1550) 0.5µm/100mm (1.0µm/200mm) (CV-EC1600W)
Vertical travel	250mm (CV-EC1550), 300mm (CV-EC1600W)
Travelling speed	0.5, 1, 2, 5mm/s at measuring
Max. probing height (OD)	420mm (CV-EC1550) for outer diameter, 545mm (CV-EC1600W) for outer diameter
Max. probing height (ID)	270mm (CV-EC1550) for inner diameter, 320mm (CV-EC1600W) for inner diameter

Radial arm unit

Radial travel	130mm (CV-EC1550), 160mm (CV-EC1600W)
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Pick up unit

Measuring force	100mN or less (adjustable)
Measuring range	1800µm
Stylus	Radius 0.8mm, Tungsten carbide

Analysis unit

Measuring magnification	100, 200, 500, 1.000, 2.000, 5.000, 10.000, 20.000, 50.000X
Digital filter	
Roundness	2CR N15, N50, N150, N500, N15-500, non-filter Gaussian D15, D50, D150, D500, D15-500, non-filter
Straightness	2CR fh0.025, 0.08, 0.25, 0.8, 2.5, 8mm, non-filter Gaussian fh0.025, 0.08, 0.25, 0.8, 2.5, 8mm, non-filter
Determination method	MZC, LSC, MCC, MIC
Geometrical features	Roundness, flatness, cylindricity, co-axiality, concentricity, runout, squareness, straightness, parallelism, thickness deviation

Utilities

Power supply	AC100V-220V, ±10%, 50/60Hz
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Analysis unit

Air supply	4.5 to 9.9kgf/cm ² (440 to 970KPa), dry air
Air pressure	4 to 5kgf/cm ² (390 to 490KPa), 30NI/min

Analysis unit

Measuring unit	590mm x 332mm x 918mm, 130kg (WxDxH)
Amplifier	406mm x 342mm x 270mm, 20kg (WxDxH)
PC and printer	Local supply

Operating environment	10°C to 30°C, RH 80% or less
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Standard delivery

- Measuring unit
- Standard probe
- Controller
- Programm software

Optional accessories

- PC with monitor
- Interchangeable styli for different applications:
Ask for separate overview
- Chucks ø 0.8 ~ 56mm used for clamping small diameter workpieces
- Reference hemisphere for checking accuracy
- Printer

ROUNDNESS TESTER CV-EC1800™

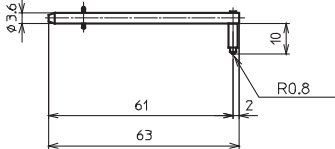
PC controlled roundness measuring system

- Motorized auto centering and tilting support function
- Large stage size of 230mm
- Geometrical features:
Roundness, straightness, cylindricity, spiral cylindricity, co-axiality, concentricity, parallelism, flatness, squareness, circular runout, thickness deviation, radius deviation, knife-edge analysis
- Powerfull data processing software
- Static air bearing
- Very high rotating accuracy of $(0.04+0.0006H)\mu\text{m}$
- Max. workpiece diameter 368mm
- Max. probing height (OD): 545mm for outer diameter
- Max. probing height (ID): 320mm for inner diameter
- 12 interchangeable styli available for all kinds of special applications

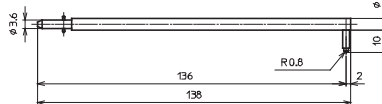


Styli for roundness testers

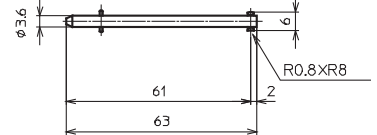
Type: SA-148



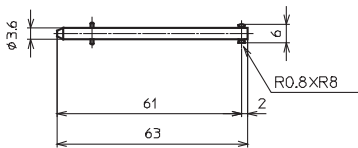
Type: SA-149



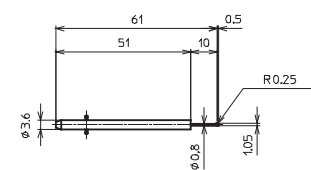
Type: SA-151



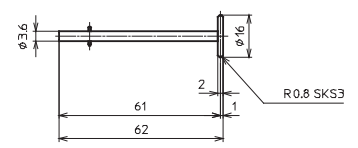
Type: SA-152



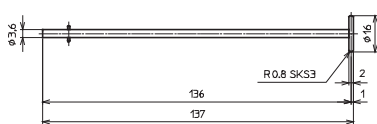
Type: SA-154



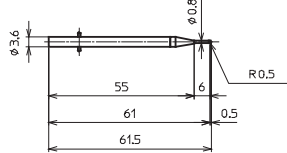
Type: SA-155



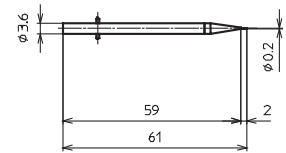
Type: SA-156



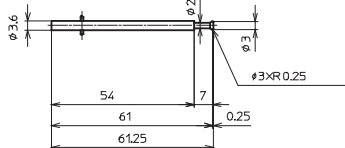
Type: SA-157



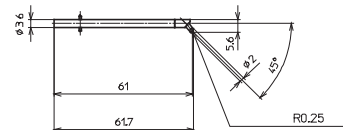
Type: SA-158



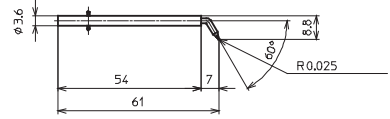
Type: SA-159



Type: SA-160



Type: SA-161



ROUNDNESS TESTER CV-EC1800™

PC controlled roundness measuring system

Technical specifications

Stage

Rotating method	Porus static air bearing / stage rotation
Rotating accuracy	(0.04+0.0006H)µm H: Height from stage (mm)
Rotating speed	1 to 6rpm
Stage size	230mm dia
Centering adjustment range	±5mm (Motorized)
Leveling adjustment range	±1° (Motorized)
Max. workpiece load	25kg
Max. workpiece diameter	368mm

Column unit

Straightness	0.4µm/100mm (1µm/300mm)
Parallelism	0.7µm/100mm (1.5µm/200mm)
Vertical travel	300mm
Travelling speed	0.5, 1 and 2mm/s at measuring, 5mm/sec at positioning
Max. measuring height	545mm for outer, 320mm for inner
Radial arm unit	Radial travel: 160mm

Pick up unit

Measuring force	100mN or less (adjustable)
Measuring range	1800µm
Stylus	Radius 0.8mm, Tungsten carbide

Analysis unit

Measuring magnification	100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K
Digital filter	
Roundness	2CR N15, N50, N150, N500, N15-500, non-filter
Gaussian	D15, D50, D150, D500, D15-500, non-filter
Straightness	2CR fh0.025, 0.08, 0.25, 0.8, 2.5, 8mm, non-filter
Gaussian	fh0.025, 0.08, 0.25, 0.8, 2.5, 8mm, non-filter
Determination method	MZC, LSC, MCC, MIC
Analysis items	Roundness, flatness, cylindricity, co-axiality, concentricity, run-out, squareness, straightness, parallelism, thickness deviation

Utilities

Power Supply	AC100V, ±10%, 50/60Hz, 1KVA
Air pressure at bearing	4 to 5kgf/cm ² G (390 to 490KPa), 30Nl/min
Air Supply	4.5 to 9.9kgf/cm ² G (440 to 970KPa), Dry air

Dimensions

Measuring unit	600mm x 400mm x 910mm (WxDxH), 150kg
Amplifier	406mm x 342mm x 270mm (WxDxH), 20kg
PC and printer	Local supply

Operating environment

10°C to 30°C, RH 80% or less

Standard delivery

- Measuring unit
- Standard probe
- Controller
- Programm software

Optional accessories

- PC with monitor
- Interchangeable styli for different applications:
Ask for separate overview
- Chucks ø 0.8 ~ 56mm used for clamping small diameter workpieces
- Reference hemisphere for checking accuracy
- Printer

ROUNDNESS TESTER CV-EC2500™

PC controlled roundness measuring system

- Motorized auto centering and tilting support function
- Large stage size of 260mm
- Safety function on pick-up
- Geometrical features:
Roundness, straightness, cylindricity, spiral cylindricity, co-axiality, concentricity, parallelism, flatness, squareness, circular runout, thickness deviation, radius deviation, knife-edge analysis
- Powerful data processing software
- Static air bearing
- Very high rotating accuracy of $(0.02+0.0003H)\mu\text{m}$
- Max. workpiece diameter 450mm
- Max. probing height (OD): 570mm for outer diameter
- Max. probing height (ID): 420mm for inner diameter
- 12 interchangeable styli available for all kinds of special applications

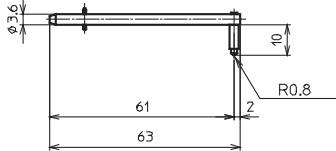
Option

- Measuring direction (IN/OUT) auto exchanger
- Radial arm straightness guarantee
(straightness $0.5\mu\text{m}/100\text{mm}$, squareness $1\mu\text{m}/100\text{mm}$)

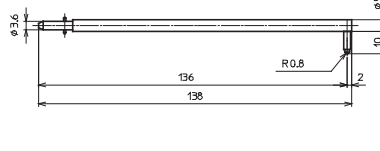


Styli for series roundness testers

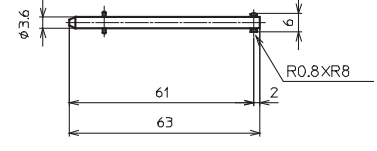
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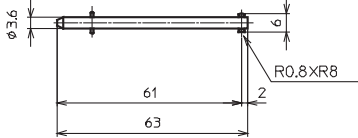
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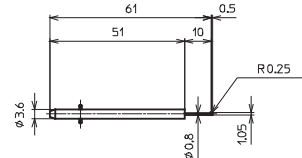
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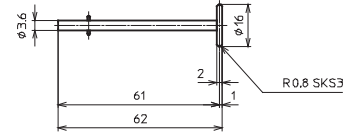
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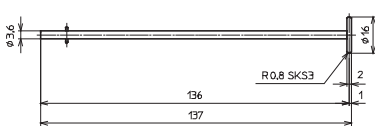
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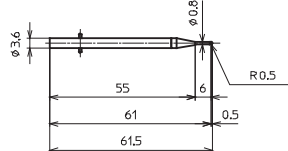
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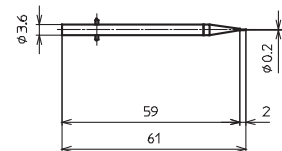
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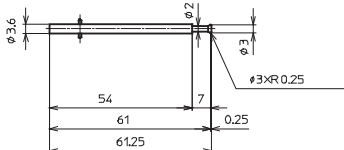
Type: SA-157



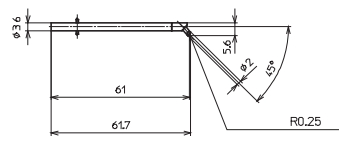
Type: SA-158



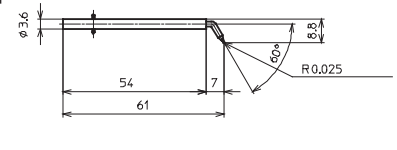
Type: SA-159



Type: SA-160



Type: SA-161



ROUNDNESS TESTER CV-EC2500™

PC controlled roundness measuring system

Technical specifications

Stage

Rotating method	Porus static air bearing / stage rotation
Rotating accuracy	(0.02+0.0003H)µm H: Height from stage (mm)
Rotating speed	1 to 10rpm
Stage size	260mm dia
Centering adjustment range	±5mm (Motorized)
Leveling adjustment range	±2° (Motorized)
Max. workpiece load	30kg
Max. workpiece diameter	450mm

Column unit

Straightness	0.15µm/100mm (0.4µm/300mm)
Parallelism	0.8µm/200mm
Vertical travel	400mm
Travelling speed	0.5, 1, 2 and 5mm/s at measuring, 20mm/sec at positioning
Max. measuring height	570mm for outer, 420mm for inner
Radial arm unit	Radial travel: 180mm

Pick up unit

Measuring force	100mN or less (adjustable)
Measuring range	1800µm
Stylus	Radius 0.8mm, Tungsten carbide

Analysis unit

Measuring magnification	100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K
Digital filter	
Roundness	2CR N15, N50, N150, N500, N15-500, non-filter
Gaussian	D15, D50, D150, D500, D15-500, non-filter
Straightness	2CR fh0.025, 0.08, 0.25, 0.8, 2.5, 8mm, non-filter
Gaussian	fh0.025, 0.08, 0.25, 0.8, 2.5, 8mm, non-filter
Determination method	MZC, LSC, MCC, MIC
Analysis items	Roundness, flatness, cylindricity, co-axiality, concentricity, run-out, squareness, straightness, parallelism, thickness deviation

Utilities

Power Supply	AC100V, ±10%, 50/60Hz, 1KVA
Air pressure at bearing	4 to 5kgf/cm ² G (390 to 490KPa), 30NI/min
Air Supply	4.5 to 9.9kgf/cm ² G (440 to 970KPa), Dry air

Dimensions

Measuring unit	930mm x 590mm x 1660mm (WxDxH), 550kg
Amplifier	406mm x 342mm x 270mm (WxDxH), 20kg
PC and printer	Local supply

Operating environment 10°C to 30°C, RH 80% or less

Standard delivery

- Measuring unit
- Standard probe
- Controller
- Programm software

Optional accessories

- PC with monitor
- Interchangeable styli for different applications:
Ask for separate overview
- Chucks ø 0.8 ~ 56mm used for clamping small diameter workpieces
- Reference hemisphere for checking accuracy
- Printer



Instruments



HARDNESS TESTERS - DUROMETERS - **SURFACE FINISH TESTERS**
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

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COATING THICKNESS GAUGE "STYLOTEST"™

Dry film pull-off gauge for steel substrates CV-CG100

- Measurement of paint coatings on steel
- Designed as a pen with a pocket clip
- Magnetic attraction principle featuring a permanent magnet
- Patented HOLD mechanism for last reading
- For open and recessed measuring areas
- Coloured zones for quick go/no-go quality assessment
- No power supply or batteries required



Technical specifications

Measuring range	25-700 microns or 1-28mm
Application	Paint coatings on steel substrates
Principle	Magnetic attraction
Accuracy	±10% of reading
Min. measuring area	25mm diameter
Standards	Conforms to DIN-EN-ISO2178
Ambient temperature	-10°C ...80°C
Dimensions	150mm length, diameter 10mm
Weight	Approx. 150g

Standard delivery

- Stylotest gauge
- Manual
- CV Instruments certificate

Optional accessories

- Coating thickness standards

COATING THICKNESS GAUGE CV-CG120 A-SERIES™

Fast and reliable analogue measurements on steel substrates model CV-CG120 series

- Highest accuracy with simplest operation
- Several models with ergonomic design
- No calibration necessary
- All gauges without power or battery
- One point measurement with a non-wearing probe
- A robust metal case and system resistant to mechanical shocks, acids and solvents



Also non-automatic models available

Type 5 = standard version
Type 6 = automatic version

Version	Range	Application	Tolerance	Minimum surface	Min. curvature radius of the sample	Min. base thickness
5 G 6 G	0... 100µm	Electroplating and the paint coatings on steel**	±1µm or 5% of the reading	∅ 20mm	5mm convex/25mm concave	0.5mm
5 F 6 F	0... 1000µm	Paint on steel**	±5µm or 5% of the reading	∅ 30mm	8mm convex/25mm concave	0.5mm
6 S3	0.2... 3mm	Enamel, plastic, and rubber on steel *	±5% of the reading	∅ 30mm	15mm convex/25mm concave	1.0mm
6 S5	0.5... 5mm		±5% of the reading	∅ 50mm	15mm convex/25mm concave	1.0mm
6 S10	2.5... 10mm		±5% of the reading	∅ 50mm	15mm convex/25mm concave	2.0mm
6 NiFe50	0... 50µm	Electroplated nickel on steel	±(2µm + 8% of the reading)	∅ 20mm	10mm convex/25mm concave	0.5mm

** steel ST 33 to ST 60

*** special

Technical specifications

Standards	DIN-EN-ISO2178, DIN50982, ASTM B499, E376, D1186, G12, B530, BS5411, ISO2361
Ambient temperature	-20°C ... 100°C
Dimensions	Gauge 215mm x 55mm x 29mm
Weight	Approx. 450gr

Standard delivery

- CV-CG120
- Plastic case
- Neck cord
- Manual
- CV Instruments certificate

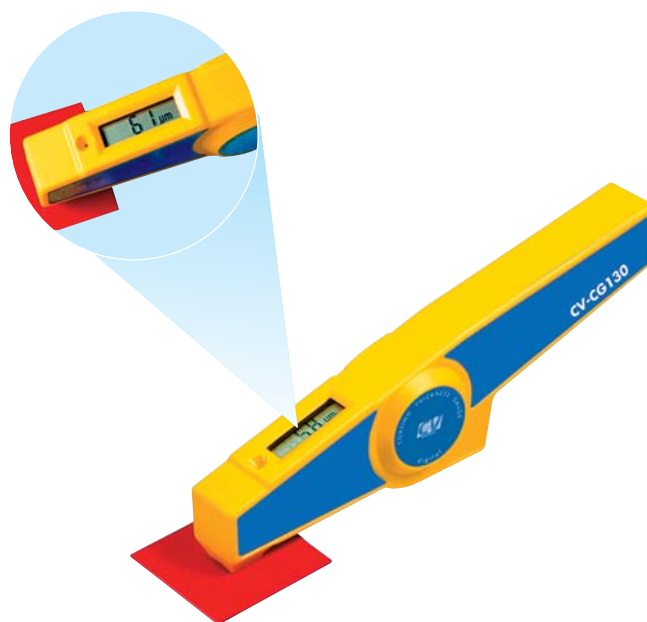
Optional accessories

- Gauges for specific applications
- Leather case for safe transport of the gauge on a belt
- Coating thickness standards
- Wet film gauge for measuring the thickness of wet coatings

COATING THICKNESS GAUGE CV-CG130 D-SERIES™

Ready-to-test analogue tester with lever system for direct load application CV-CG130 series

- New generation digital patented coating thickness gauges ("7 Series") featuring higher accuracy and easy digital display reading
- 4 models available
- No calibration necessary
- All gauges with battery
- One point measurement with a non-wearing probe
- A robust heavy case and system resistant to mechanical shocks, acids and solvents



	CV-CG130 G7	CV-CG130 F7	CV-CG130 S5 7	CV-CG130 S15 7
Range	0-300μm	0mm-1.5mm	0.5mm-5.0mm	3.0mm-15.0mm
Tolerance	2μm ±3%	5μm ±3%	±4%	±4%
Accuracy	0.5μm	1μm	5μm	20μm
Min. measuring contact	20mm	30mm	50mm	100mm
Min. radius convex/concave	5mm/25mm	8mm/25mm	15mm/25mm	100mm/150mm
Min. substrate thickness	0.5mm	0.5mm	1mm	7mm

Technical specifications

Standards	DIN-EN-ISO2178, DIN50982, ASTM B499, E376, D1186, G12, B530, BS5411, ISO2361
Ambient temperature	-10°C ...50°C
Dimensions	Gauge 210mm x 58mm x 32mm
Weight	Approx. 400gr

Standard delivery

- CV-CG130
- Plastic case
- Neck cord
- Manual
- Batteries
- CV Instruments certificate

Optional accessories

- 4 gauges for specific applications
- Leather case for safe transport of the gauge on a belt
- Coating thickness standards
- Wet film gauge for measuring the thickness of wet coatings

COATING THICKNESS GAUGE TT-210™

Handheld gauge with integrated FN probe

- Easy to use
- Integrated probe FN
- Automatic substrate recognition
- Automatic calculation: Mean/Max/Min/No./S.Dev
- Upper-lower limit setting and sound alarm
- Data output RS-232 to printer TA-220S or PC
- Storage function for 500 measuring results
- Measurement modes: continuous/single
- Battery operated

NEW!



Technical specifications

Operating principle	Magnetic induction/eddy current
Measurement range	0µm to 1250µm
Measuring system	Selectable mm/inch
Minimum resolution	0.1µm (coating thickness <100µm)
Measuring accuracy	F: $\pm(3\%H+1\mu\text{m})$ N: $\pm(3\%H+1.5\mu\text{m})$ H = nominal value
Statistics	Average (MEAN), MAX., MIN., number of measurements (NO.), standard deviation (S.Dev)
Power supply	Battery AAA 1.5V (2 pcs)
Display	LCD with back-light
Dimensions	110mm x 50mm x 23mm
Weight	100gr

Standard delivery

- Main unit
- Calibration foil set
- AAA 1.5V battery (2 pcs)
- Manual
- Certificate
- Carrying case

Optional

- Printer TA-220S with cable

COATING THICKNESS GAUGE TT-211 TM

Simple handheld gauge with integrated F probe

- Easy to use
- Integrated probe F
- Auto off
- Mm/inch selectable
- Resolution selectable
- Battery operated

NEW!



Technical specifications

Operating principle	Magnetic induction
Measurement range	0 to 1250μm
Measuring system	Selectable mm/inch
Minimum resolution	Selectable 1μm, 5μm, 10μm
Measuring accuracy	F:±(3%H+1μm) H=normal value
Power supply	Battery AAA 1.5V (2 pcs)
Display	LCD
Dimensions (L x W x H)	100mm x 50mm x 23mm
Weight	100gr

Standard delivery

- Main unit
- Zero plate
- AAA 1.5V battery (2 pcs)
- Manual
- Certificate
- Carrying case

COATING THICKNESS GAUGE TT-220™

Handheld gauge with integrated F-probe for steel substrates

- Integrated probe: NO CABLES !
- Any non-magnetic coating on ferrous substrates
- Continuous or single measurement modes
- Statistics
- Real time or batch printing with TA-220 printer
- Rechargeable batteries



Printer TA-220



Technical specifications

Operating principle	Magnetic induction
Application	Any non-magnetic coating on ferrous substrates
Measuring range	0μm- 1250μm
Minimum resolution	0.1μm (coating thickness <10μm)
Measuring accuracy	Zero-point calibration ±(3%H+1μm)μm Two-point calibration ±(1%~3%H+1μm)μm (H= nominal value)
Statistics	Average (MEAN), maximum (MAX), minimum (MIN), number of measurements (NO), standard deviation (S.DEV.)
Features	Real time printing or batch printing on TA-220 Continuous measurement (CONTINUE) and single measurement (SINGLE) Automatic switch off
Sample	
Min. radius workpiece	Convex 1.5mm, concave 9mm
Min. measuring area	7mm diameter
Min. sample thickness	0.5mm
Operating temperature	0°C - 40°C
Power supply	NiMH batteries, 3.6V
Dimensions	150mm x 53mm x 22mm
Weight	150gr

Standard delivery

- Main unit
- Charger
- Calibration foil set
- Carrying case
- Pocket case
- Certificate
- Manual

Optional accessories

- Printer TA-220 with cable
- Certified calibration foils

COATING THICKNESS GAUGE TT-230™

Handheld gauge with integrated N-probe for non-ferrous substrates

- Integrated probe: NO CABLES !
- Continuous or single measurement modes
- Statistics
- Real time or batch printing with TA-220 printer
- Rechargeable batteries



Printer TA-220



Technical specifications

Operating principle	Eddy current
Application	Insulating coatings on non-ferrous substraten
Measuring range	0 - 1250μm
Minimum resolution	0.1μm (coating thickness <10μm)
Accuracy	Zero-point calibration ±(3%H+1μm)μm Two-point calibration ±(1%~3%H+1μm)μm (H= nominal value)
Statistics	Average (MEAN), maximum (MAX), minimum (MIN), number of measurements (NO), standard deviation (S.DEV.)
Features	Real time printing or batch printing on TA-220 Continuous measurement (CONTINUE) and single measurement (SINGLE) Automatic switch off
Sample	
Min. radius workpiece	Convex 1.5mm, concave 9mm
Min. measuring area	7mm diameter
Min. sample thickness	0.5mm
Operating temperature	0°C - 40°C
Power supply	NiMH batteries, 3.6V
Dimensions	150mm x 53mm x 22mm
Weight	150gr

Standard delivery

- Main unit
- Charger
- Calibration foil set
- Carrying case
- Pocket case
- Manual
- Certificate

Optional accessories

- Printer TA-220 with cable
- Certified calibration foils

COATING THICKNESS GAUGE TT-260™

Portable gauge with integral printer and external probes series F or N

- Robust design with removable integral printer
- Large measuring range with several probes available
- Direct testing mode and block statistics mode (APPL/BATCH)
- Direct print out of statistical values
- Data transmission to pc with Dataview software



Technical specifications

Measuring range	0µm - 1250µm with standard probe F1, N1 (10.000µm max)
Probes available	Several probes available for F (ferrous; on steel/iron) and N (non-ferrous metals)
Tolerance	F1: ±(1µm + 3% of reading) N1: ±(1.5µm + 3% of reading)
Resolution	0.1µm
Display	Alphanumeric with 4 large digits
Operation language	English
Standards	Conforms to DIN, ISO, ASTM, BS
Min. measuring area	ø5mm (standard probe N1), ø7mm (standard probe F1)
Min. curvature radius	Convex: 3mm, concave: 50mm
Min. substrate thickness	Type F: 0.5mm, type N: 0.3mm
Calibration	Factory setting, zero and foil calibration
Statistics	Number of measurements, mean, standard deviation, maximum and minimum of maximum 3000 readings
Data memory	5 blocks of 99 readings can be stored for later reference
Limits	Adjustable with acoustic alarm
Interface	RS-232
Operating temperature	0°C - 40°C
Power supply	NiMH rechargeable batteries, 1.25V (4 pcs)
Dimensions	270mm x 86mm x 47mm
Weight	530gr

Standard delivery

- Main unit
- Probe (F or N series selectable)
- Charger
- Zero plate
- Calibration foils
- Carrying case
- Manual
- Certificate

Optional accessories

- Several probes for different applications
- PC software Dataview for online and data transfer
- Certified calibration foils in various thickness



Instruments



HARDNESS TESTERS - DUROMETERS - SURFACE FINISH TESTERS
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

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COATING THICKNESS GAUGE CV-CG200 SERIES™

Handheld gauge CV-CG200 series with integrated probe F or N or FN

- Integrated probe F or N or FN
- Ergonomic design
- Automatic substrate recognition (ferrous/non-ferrous)
- User friendly operation menu
- Online statistics on display
- Calibration standards stored in housing
- Manual available in English, French or German language
- Data transmission by infrared interface and RS-232C



Technical specifications

Models with integrated probe	CV-CG200F (ferrous; on steel/iron) CV-CG200N (non-ferrous metals), CV-CG200FN (ferrous and non-ferrous combined)
Models with external probe	Same as above but now model CV-CG210
Measuring range	0 - 2000μm (μm/mills selectable)
Tolerance	±(2μm + 3% of reading)
Resolution	0.1 μm
Display	Alphanumeric with back-light
Operating language	English
Standards	DIN, ISO, ASTM, BS
Min. measuring area	20mm diameter
Min. curvature radius	Convex: 5mm, Concave: 60mm in centre, 35mm at the edges
Min. substrate thickness	Type F: 0.5mm, type N: 50μm
Calibration	Factory setting, zero and foil calibration
Statistics	Number of measurements, mean, standard deviation, maximum and minimum; block statistics (5...30) data per block
Data memory	90 readings or 45 block values
Limits	Adjustable with acoustic alarm
Interface	RS-232C (to printer CV-CG300 or pc)
Ambient temperature	0°C - 50°C
Power supply	2AA batteries, 1.5V
Dimensions	Gauge 160mm x 35mm x 40mm
Weight	Approx. 200gr

Standard delivery

- Gauge + probe (F or N or FN)
- Soft pouch with strip and wriststrap
- Zero plate (one or two according to model)
- Calibration foils (2 pcs)
- Batteries (2pcs)
- Manual
- CV Instruments certificate

Optional accessories

- PC software for online and data transfer
- Interface cable for standard PC
- Portable data printer CV-CG300 with interface cable
- Calibration foils in various thickness

COATING THICKNESS GAUGE CV-CG210 SERIES™

Handheld gauge CV-CG210 series with external fixed probe F or N or FN

- Fixed external probe F or N or FN
- Ergonomic design
- Automatic substrate recognition (ferrous/non-ferrous)
- User friendly operation menu
- Online statistics on display
- Calibration standards stored in housing
- Manual available in English, French or German language
- Data transmission by infrared interface



Technical specifications

Models available	CV-CG210F (ferrous; on steel/iron), CV-CG210N (non-ferrous metals), CV-CG210FN (ferrous and non-ferrous combined)
Measuring range	0 - 2000μm (μm/mils selectable)
Tolerance	±(2μm + 3% of reading)
Resolution	0.1 μm
Display	Alphanumeric with back-light
Operating language	English
Standards	DIN, ISO, ASTM, BS
Min. measuring area	20mm diameter
Min. curvature radius	Convex: 5mm, Concave: 60mm in centre, 35mm at the edges
Min. substrate thickness	Type F: 0.5mm, type N: 50μm
Calibration	Factory setting, zero and foil calibration
Statistics	Number of measurements, mean, standard deviation, maximum and minimum; block statistics (5....30) data per block
Data memory	90 readings or 45 block values
Limits	Adjustable with acoustic alarm
Interface	Infrared to printer CV-CG300 or pc
Ambient temperature	0°C - 50°C
Power supply	2AA batteries, 1.5V
Dimensions	Gauge 160mm x 35mm x 40mm
Weight	Approx. 200gr

Standard delivery

- Gauge + probe (F or N or FN)
- Soft pouch with strip and wriststrap
- Zero plate (one or two according to model)
- Calibration foils (2 pcs)
- Batteries (2pcs)
- Manual
- CV Instruments certificate

Optional accessories

- PC software for online and data transfer with infrared interface cable
- Portable data printer CV-CG300 with infrared interface cable
- Calibration foils in various thickness

COATING THICKNESS GAUGE CV-CG310/320™

Portable gauge with external probes series

- Robust design, top quality instrument
- CV-CG310 memory for 1 reading only
- CV-CG320 memory for 10.000 readings
- Large measuring range with 20 probes available
- Direct testing mode
- Large memory with statistics computation
- Coating-through-coating feature
- Data output to printer CV-CG300 or pc



CV-CG300 printer



20 probes
available
See technical
specification
overview !

Technical specifications

Models available	20 probes available for F (ferrous; on steel/iron), N (non-ferrous metals) and FN (combined), see list
Measuring range	0 - 1600μm with standard probe F1.6 or N1.6
Tolerance	±(1μm + 1% of reading) with standard probes
Resolution	0.1μm
Display	Alphanumeric with 4 large digits
Operation language	English
Standards	DIN, ISO, ASTM, BS
Min. measuring area	5mm x 5mm (with standard probe)
Min. curvature radius	Convex: 3mm, concave: 50mm
Min. substrate thickness	Type F: 0.5mm, type N: 50μm
Calibration	Factory setting, zero and foil calibration
Statistics	Number of measurements, mean, standard deviation, maximum and minimum of maximum 10.000 readings (only CV-CG320)
Data memory	1 individual reading (CV-CG310) 10.000 individual readings, 1 batch only (CV-CG320) See next page for models with extended memory capacity
Interface	RS-232
Ambient temperature	0°C - 50°C
Power supply	1 x 9V alkaline battery, AC adapter
Dimensions	Gauge 150mm x 82mm x 35mm
Weight	Approx. 270gr

Standard delivery

- Gauge excluding probe
- Zero plate
- Calibration foils (2 pcs)
- Manual
- CV Instruments certificate

Optional probes

- Probes (F or N or FN series selectable), see overview

Optional accessories

- Carrying case with accessories
- 20 probes for different applications, see overview
- Printer CV-CG300
- PC software for online and data transfer
- Calibration foils in various thickness

See next page for models with extended memory capacity

COATING THICKNESS GAUGE CV-CG330/340™

Portable gauge with external probes series

- Robust design, top quality instrument
- CV-CG330 memory 10.000 readings, 100 batches
- CV-CG340 memory 10.000 readings, 500 batches
- Large measuring range with 20 probes available
- Direct testing mode and block statistics mode
- Large memory with block statistics computation
- Coating-through-coating feature
- Data output to printer CV-CG300 or pc



CV-CG300 printer

20 probes
available

See technical
specification
overview !

Technical specifications

Models available	20 probes available for F (ferrous; on steel/iron), N (non-ferrous metals) and FN (combined), see list
Measuring range	0 - 1600μm with standard probe F1.6 or N1.6
Tolerance	±(1μm + 1% of reading) with standard probes
Resolution	0.1μm
Display	Alphanumeric with 4 large digits
Operation language	English
Standards	DIN, ISO, ASTM, BS
Min. measuring area	5mm x 5mm (with standard probe)
Min. curvature radius	Convex: 3mm, concave: 50mm
Min. substrate thickness	Type F: 0.5mm, type N: 50μm
Calibration	Factory setting, zero and foil calibration
Statistics	Number of measurements, mean, standard deviation, maximum and minimum of maximum 10.000 readings
Data memory	10.000 individual readings and max. 100 batches with individual values (CV-CG330) 10.000 individual readings and max. 500 batches with individual values (CV-CG340)
Limits	Adjustable with acoustic alarm
Interface	RS-232
Ambient temperature	0°C - 50°C
Power supply	1 x 9V alkaline battery, AC adapter
Dimensions	Gauge 150mm x 82mm x 35mm
Weight	Approx. 270gr

Standard delivery

- Gauge excluding probe
- Zero plate
- Calibration foils (2 pcs)
- Manual
- CV Instruments certificate

Optional probes

- Probes (F or N or FN series selectable) see overview

Optional accessories

- Carrying case with accessories
- 20 probes for different applications, see overview
- PC software for online and data transfer
- Calibration foils in various thickness

COATING THICKNESS GAUGE CV-CG250/250B™

Basic model portable gauge with external probe / statistics & output optional

- Fixed external probe F or N or FN
- Ergonomic design
- Automatic substrate recognition (ferrous/non-ferrous)
- User friendly operation menu
- Display with black-light
- Calibration standards stored in housing
- Language selectable English, French or German

Model CV-CG250 only:

- Online statistics on display
- Data transmission by RS-232
- Data output to printer CV-CG300 (with cable) or pc



Technical specifications

Range	Type F (ferrous)	0...3000μm / 120 mils
	Type N (non-ferrous)	0...2000μm / 80 mils
	Type FN (ferrous/non-ferrous)	0...2000μm / 80 mils
Accuracy	± 2μm (0.08 mils) or 4% of the value	
Min. radius	5mm (0.2 inch) convex and 25mm (1 inch) concave	
Min. measuring contact	ø 20mm (0.8inch)	
Min. substrate thickness	0.5mm (20 mils)	
Display	Alphanumeric with 4 digits (11mm/0.44inch)	
Unit	μm - mils to choice	
Calibration	Standard, 1-point, 2-point	
Statistics	X average, standard dev., n (max. 9999), min, max	
Interface	RS-232 C	
Power supply	2 alkaline batteries (for over 10.000 readings)	
Dimensions	Gauge:	64mm x 115mm x 25mm
	Probe:	15mm dia. x 62mm (0.6inch x 2.5inch)

Standard delivery

- Gauge + probe (F or N or FN)
- Zero plate (one or two according to model)
- Calibration foils (2 pcs.)
- Batteries (2 pcs)
- RS-232-C (model CV-CG250 only)
- Manual
- CV Instruments certificate

Optional accessories

- Portable data printer CV-CG300 with interface cable
- Calibration foils in various thickness
- Soft pouch with strip and wriststrap



PRINTER CV-CG300™

CV Printer for CV-CG250/310/320/330/340/600 coating thickness gauge series

- Reliable and fast mini-printer for CV-CG250/310/320/330/340/600
- Prints numerical values
- EPSON print head
- RS-232 input
- Power adapter included



Technical specifications

Display	4 digit lcd
Functions	Paper feed, on/off
Data transmission	RS-232C
Print head	5 x 7 matrix Epson
Paper	50mm
Power	Storage battery 5V
Charger	5V / 2.4A
Dimensions	85mm x 152mm x 48mm
Weight	0.5kg

Standard delivery

- Printer CV-CG300
- Charger 5V
- Printer rolls (2 pcs)
- Storage battery 5V

Optional accessories

- Data cable
- Printer paper (set of 5)
- Printer ribbon

WALL THICKNESS GAUGE CV-CG500™

Handheld gauge for wall and coating thickness testing of metals, glass and plastics



- New: Considerably improved measuring properties through SIDSP !
- Non-destructive wall thickness measurement up to 4mm and/or 10mm
- Up to 20 measurements per second
- For all non-magnetic materials such as plastics, wood, glass, ceramics, glass fiber, carbon fiber laminates, non-ferrous metals, etc.
- For hollow parts and containers of all kinds such as bottles, cans, injection moulding products, etc.
- Also for plastic sheets, automotive body parts, glass panes, SMC plastics other large-sized components, etc.
- Complete measuring technique is integrated in the sensor

With this totally new SIDSP procedure, all necessary measuring signals are created and completely processed in the sensor itself. Only the completely processed digital readings are transferred to the base unit for display, statistical evaluation and data storage. Unlike the commonly used analogue procedures, the new SIDSP procedure excludes any error influences on the measuring data during transfer over the probe cable. The result is a measuring accuracy and constancy of readings, unmatched so far. Further innovations to increase measuring accuracy: the new process technology manufacture the reference balls used to results an increased reproducibility of over 0.5% and the calibration method enabling up to 5 calibration points. Calibration can be done over the complete range or over defined ranges.

Innovative menu control and data filing system

The new CV-CG500 is very easy to operate. The menu-controlled user surface offers a user-friendly data filing system similar to common PC applications and a contextsensitive on-line help.

Data processing

The gauge features display of minimum and maximum readings, an offset mode (related to the set value), automatic storage of readings into the statistics as well as visual display of the continuously taken readings (real-time diagram).

WALL THICKNESS GAUGE CV-CG500™

Handheld gauge for wall and coating thickness testing of metals, glass and plastics

Technical specifications

Measuring principle	Magneto-static
Measuring rate	Up to 20 readings per second
Number of readings memorized in the statistics	1, 2, 5, 10, 20 readings/sec to choice
Measuring range FH4 probe	0...1.5mm with 1.5mm reference ball 0...2.5mm with 2.5mm reference ball 0...4.0mm with 4.0mm reference ball
Measuring range FH10 probe	0...2.5mm with 2.5mm reference ball 0...4.0mm with 4.0mm reference ball 0...10.0mm with 6.0mm reference ball
Low range sensitivity	0.1µm
Measuring tolerance of FH4 probe	0...1.5mm : ± (5µm + 1 % of reading) 0...2.5mm : ± (5µm + 1 % of reading) 0...4.0mm : ± (10µm + 1 % of reading)
Measuring tolerance of FH 10 probe	0...2.5mm : ± (5µm + 1 % of reading) 0...4.0mm : ± (10µm + 1 % of reading) 0...10.0mm : ± (20µm + 1 % of reading)
Calibration modes	Zero, 2-point, 3-point, 4-point and 5-point calibration
Display	LCD 160x160 pixel with backlight
Measuring units	Metric (µm, mm), imperial (mils, inch)
Data memory	100,000 readings
Statistical evaluation	Numeric, trend and histogram
Languages	English, German, French
Interface	Cable, (RS232 TTL) and/or combination port for foot switch, external contact, Infrared (IrDA 1.1)
Operating temperature	-10°C ... +60°C
Storing temperature	-20°C ... +80°C
Dimensions and weight of gauge	153mm x 89mm x 32mm / 310 gr (batteries incl.)
Dimensions and weight of FH4 probe	17mm ø x 96mm / 90 gr
Dimensions and weight of FH10 probe	29,5mm ø x 125mm / 300 gr
Dimensions of plastics carrying case	365mm x 450mm x 140mm
Power supply	4 x AA (LR06), power unit (90-240V~ / 48-62Hz)

Standard delivery

- CV-CG500
- Batteries AA LR06(4 pcs)
- Instruction manual available in German/English/French
- Short manual
- Carrying case
- Magnetic screwdriver

Optional accessories for CV-CG500

- Portable printer CV-CG550
- Probe FH4 including operating stand
- Probe FH10 including operating stand
- Rubber protection case

Standard accessories for probe FH4^{*1}

- Calibration cap: 0.3mm, 1mm, 3mm
- 3 zero calibration standards: ø1.5mm, ø2.5mm, ø4mm
- Set of 100 balls ø1.5mm
- Set of 100 balls ø2.5mm
- Set of 50 balls ø4mm

Standard accessories for probe FH10^{*2}











- Calibration cap: 1mm, 3mm, 8mm
- 4 zero calibration standards: ø2.5mm, ø4mm, ø6mm, ø9mm
- Set of 100 balls ø2.5mm
- Set of 50 balls ø4mm
- Set of 25 balls ø6mm
- Set of 10 balls ø9mm

*1. Set of standards for 5 points calibration/FH-4 probe and ball diameter 4 mm.
1 Precision standard in approx. 0.43mm, 0.75mm, 1.3mm, 2.2mm and 3.6mm.

*2. Set of standards for 5 points calibration/FH-10 probe and ball diameter 6 mm.
1 Precision standard in approx. 1.0mm, 1.7mm, 3.0mm, 5.2mm and 9.0mm.











PROBES FOR CV-CG310/320/330/340 SERIES™

N-probes for non-ferrous substrates

Probe model	Probe type	Measuring range/ Min. area for measurement	Application
	N 02 Non-ferrous	0-200µm ø 2mm	Extremely thin insulating coatings, e.g. paint or anodising coatings on non-ferrous metal high resolution (0.1µm) in the lower part of the measuring range
	N 08Cr Non-ferrous	0-80µm ø 5mm	Extremely thin chrome coatings on copper, aluminium or brass
	N 1.6 Non-ferrous	0-1600µm ø 5mm	thin insulating coatings, e.g. paint or anodising coatings on non-ferrous metal high resolution (0.1µm) in the lower part of the measuring range
	N 2 Non-ferrous	0-2000µm ø 2mm	Insulating coatings, e.g. paint, on non-ferrous NOT AVAILABLE!
	N 1.6/90 Non-ferrous	0-1600µm ø 5mm	Thin insulating coatings, e.g. paint or anodising coatings on non-ferrous metal especially appropriate for measurements in tubes and pipes or objects which are difficult to access high resolution (0.1µm) in the lower part of the measuring range
	N 2/90 Non-ferrous	0-2000µm ø 5mm	Insulating coatings, e.g. paint, on non-ferrous metal especially appropriate for measurements in tubes and pipes or objects which are difficult to access
	N 10 Non-ferrous	0-10mm ø 50mm	Insulating coatings, e.g. rubber, plastics, glass, on non-ferrous metal
	N 20 Non-ferrous	0-20mm ø 70mm	Insulating coatings, e.g. rubber, plastics, glass, on non-ferrous metal
	N 100 Non-ferrous	0-100mm ø 200mm	Insulating coatings, e.g. rubber, plastics, glass, compounds etc., on non-ferrous metal
	CN 02 Non-ferrous	10-200mm ø 7mm	Non-ferrous metal coatings, e.g. copper, on insulating substrates

PROBES FOR CV-CG310/320/330/340 SERIES™

F-probes for ferrous substrates and FN-probes for ferrous and non-ferrous substrates

Probe model	Probe type	Measuring range/ Min. area for measurement	Application
	FN 1.6 Combined Probe	0...1600µm ∅ 5mm	Non-magnetic coatings on steel and insulating coatings on non-ferrous metal high resolution (0.1 µm) in the lower part of the measuring range
	FN 1.6 P Combined Probe	0...1600µm ∅ 30mm	Powder coatings before baking on steel and non-ferrous metal
	F 05 Ferrous	0...500µm ∅ 3mm	Extremely thin metals, oxide or paint coatings on small steel objects high resolution (0.1 µm) in the lower part of the measuring range
	F 1.6 Ferrous	0...1600µm ∅ 5mm	Non-magnetic coatings on steel high resolution (0.1 µm) in the lower part of the measuring range
	F 3 Ferrous	0...3000µm ∅ 5mm	Non-magnetic coatings on steel, thick paint and enamel coatings
	F 1.6/90 Ferrous	0...1600µm ∅ 5mm	Non-magnetic coatings on steel especially appropriate for measurements in tubes and pipes or objects which are difficult to access high resolution (0.1 µm) in the lower part of the measuring range
	F 2/90 Ferrous	0...2000µm ∅ 5mm	Non-magnetic coatings on steel especially appropriate for measurements in tubes and pipes or objects which are difficult to access
	F 10 Ferrous	0...10mm ∅ 20mm	Anticorrosive coatings in tanks and pipe construction, e.g. glass, plastics, rubber and concrete on steel
	F 20 Ferrous	0...20mm ∅ 40mm	Anticorrosive coatings in tanks and pipe construction, e.g. glass, plastics, rubber and concrete on steel
	F 50 Ferrous	0...50mm ∅ 300mm	Anticorrosive coatings in tanks and pipe construction, e.g. glass, plastics, rubber and concrete on steel antinoise coatings

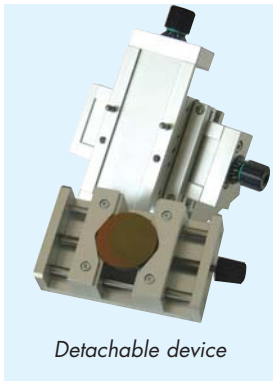
LAYER THICKNESS GAUGE CV-LT100™

Spherical cap grinder for determination of the layer thickness of coatings and layer systems

- Monolayers and Layer systems in a single processing step
- Measurement independent of the material
- Comfortable operation
- Precise measurement without calibration

Detachable device:

The vice is attached to the compound table through adjust pins. It can be removed with the probe fixed and can be replaced under the microscope to examine if the coating is already ground correctly through to the base material. If this is not the case, the vice including the probe can be placed accurately onto the compound table to continue the grinding process.



Detachable device



Technical specifications

Layer thicknesses	Approx. 0.3 - 50µm
Diameter of the spherical cap	Approx. 0.1 - 2mm
Accuracy of measurement	1 - 5 % (dependent on microscope magnification and evaluation)
Input voltage range	85 - 264 VAC
Input frequency range	47 - 63 Hz
Ball diameter	15 - 30mm
Clamping range for plane samples	50mm
Clamping range for round samples	3 - 30mm (Clamping jaw for other Dimensions on request)
Compound table travel	25mm x 25mm
Incline of Sample level	60 degrees
LED Displays (14mm Height)	4 digits number of revolutions 4 digits Runtime 1 digits Program number
Number or revolutions of the drive shaft	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200 1/min
Runtimes	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 110, 120, 150, 180 s
Dimensions	300mm x 295mm x 235mm (B x T x H)
Weight	Approx. 8kg

Standard delivery

- Main unit

Optional accessories

- Grinding paste of various granulation
- Various microscopes
- Table
- Further accessories available on request

LAYER RESISTANCE MEASUREMENT GAUGE CV-LT200™

Ball cratering test device for the determination of wear coefficients of coatings and materials

- Reproducible measurement of wear and scratching resistance
- Measurement of layer thickness
- Comfortable operation
- For quality assurance and layer development
- Suitable for coatings such as hard coatings, paint coatings and plastic coatings



Technical specifications

Ball diameter	Min. \varnothing 15mm Max. \varnothing 30mm
Speed range	20 - 500 U/min
Programmable	Grinding feed traverse, grinding period, Number of revolutions, Dosing time, ...
Clamping range for plane parts	50mm
Clamping range for round parts	\varnothing 3 - 30mm (clamping jaws for other dimensions available on request)
Compound table travel	25mm x 25mm
Dimensions	305/295/295 (height/width/depth)
Weight	Approx. 8kg
Compressed air supply	Approx. 2 bar

Standard delivery

- CV-LT200 with compound table and pneumatic dosing device for the abrasive slurry
- CV Instruments certificate
- Installation & users manual

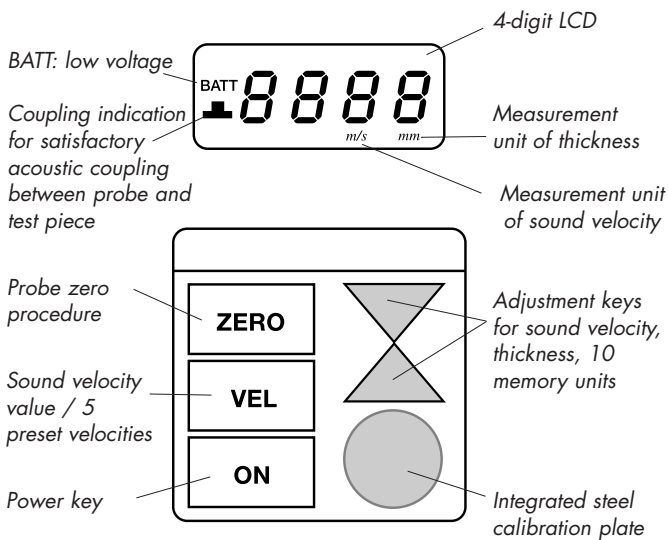
Optional accessories

- Abrasive slurry with reference sample
- Calibration certificate of the IST
- Laser pointer
- Gauge for adjusting the normal force on the sample
- Microscopes (optionally with video camera to measure the diameter of the wear crater)
- Software for easy calculation of the wear coefficient
- Compact compressor for CV-LT200: The compressor provides the compressed air needed for the pneumatic dosage of the abrasive material. Oil-free, maintenance-free, low noise. Including matching hose connection

ULTRASONIC THICKNESS GAUGE DELTA TT-100™

Handheld gauge for thickness of metals, glass and plastics

- Easy to operate ultrasonic wall thickness gauge
- Suitable for metal, glass, homogeneous plastics
- Standard 5 MHz transducer included
- Sound velocity range up to 9999m/s
- Clear 4-Digit LCD display
- Display resolution 0.1mm
- Memory for 10 readings
- 5 pre-set sound velocities for repeating applications



Technical specifications

Measuring range (steel)	1.2mm - 225.0mm with 5 MHz transducer
Measuring range for steel pipes	Minimum 3mm thickness x 20mm diameter
Transducer frequency	Standard 5 MHz, diameter probe 10mm
Display resolution	0.1mm
Calibration	4.0mm steel base plate integrated
Measurement accuracy	$\pm(1\%H+0.1)$ mm
Measuring units	Mm
Sound velocity range	1000 - 9999m/s
Resolution velocity range	1 m/s
Display	4-Digit LCD
Memory	Storage of 10 thickness readings
Surface temperature	Standard -10°C to +60°C (high temperature see TT-120)
Battery indicator	Low battery voltage indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	250 hours continuously
Dimensions	126mm x 68mm x 23mm
Weight	Approx. 250gr including batteries

Standard delivery

- Main unit
- Transducer 5 MHz
- Integrated steel calibration plate 4.0mm
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

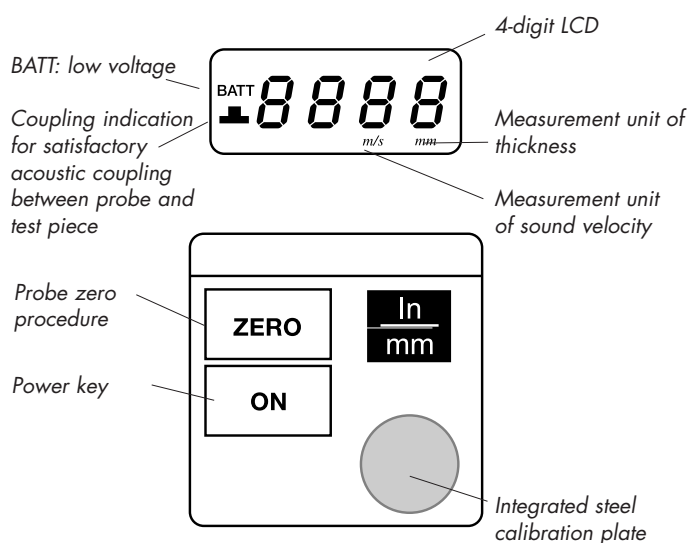
Optional accessories

- Transducers for special applications

ULTRASONIC THICKNESS GAUGE DELTA TT-110™

Handheld gauge for steel thickness only

- Easy to operate ultrasonic wall thickness gauge
- Special model for steel only
- Standard 5 MHz transducer included
- Clear 4-Digit LCD display
- Display resolution 0.1 mm
- Mm/inch selectable



Technical specifications

Measuring range (steel)	1.2mm - 225.0mm with 5 MHz transducer
Measuring range for steel pipes	Minimum 3mm thickness x 20mm diameter
Transducer frequency	Standard 5 MHz, diameter probe 10mm
Display resolution	0.1 mm
Calibration	4.0mm steel base plate integrated
Measurement accuracy	$\pm(1\%H+0.1)$ mm
Measuring units	Mm/inch selectable
Sound velocity	5900m/s
Display	4-Digit LCD
Surface temperature	Standard -10°C to +60°C (high temperature see TT-120)
Battery indicator	Low battery voltage indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	250 hours continuously
Dimensions	126mm x 68mm x 23mm
Weight	Approx. 250gr including batteries

Standard delivery

- Main unit
- Transducer 5 MHz
- Integrated steel calibration plate 4.0mm
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

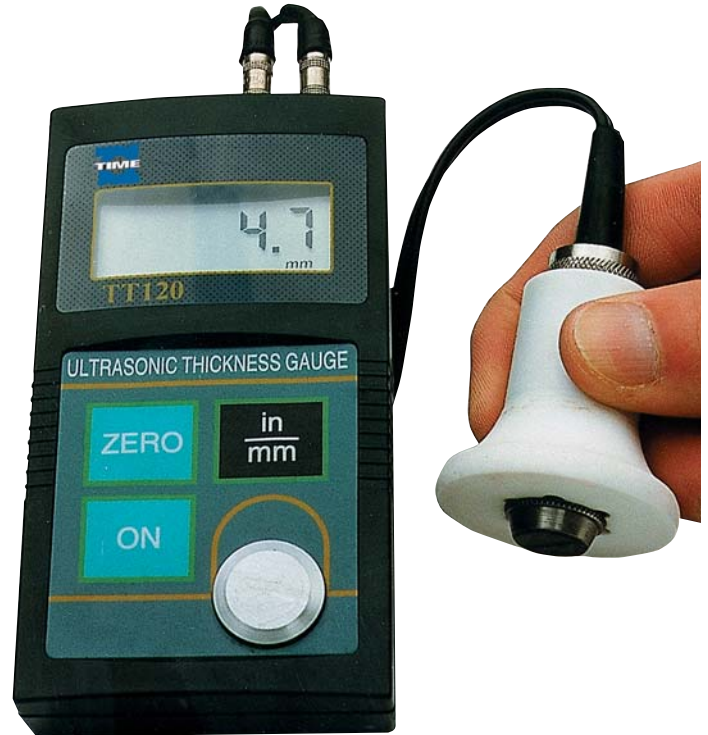
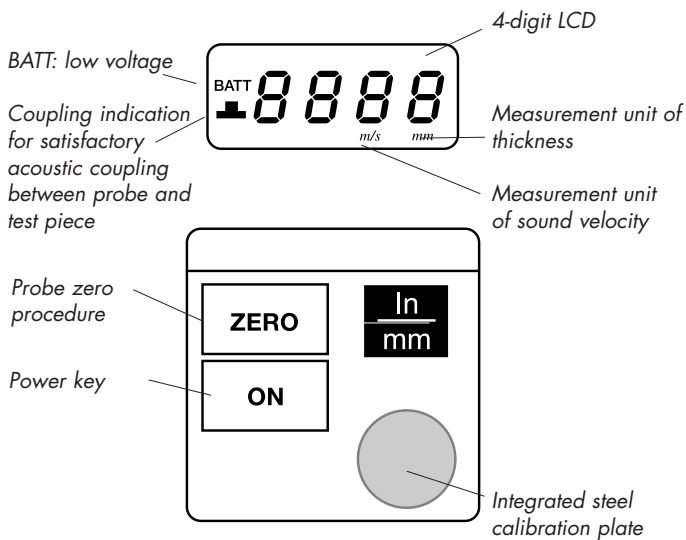
Optional accessories

- Transducers for special applications

ULTRASONIC THICKNESS GAUGE DELTA TT-120™

Handheld gauge for thickness of high temperature steel

- Easy to operate ultrasonic wall thickness gauge
- Special model featuring high-speed test mode for high temperature steel surfaces up to 300°C
- Standard ZW5P transducer (high temperature) included
- Clear 4-Digit LCD display
- Display resolution 0.1 mm



Technical specifications

Measuring range (steel)	4.0mm - 80.0mm with ZW5P transducer
Transducer frequency	Standard 5 MHz, diameter probe 14mm
Surface temperature	Up to 300°C maximum
Display resolution	0.1 mm
Calibration	4.0mm steel base plate integrated
Measurement accuracy	$\pm(1\%H+0.1)$ mm
Measuring units	Mm/inch selectable
Sound velocity	5900m/s
Display	4-Digit LCD
Battery indicator	Low battery voltage indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	250 hours continuously
Dimensions	126mm x 68mm x 23mm
Weight	Approx. 250gr including batteries

Standard delivery

- Main unit
- Transducer ZW5P
- Integrated steel calibration plate 4.0mm
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

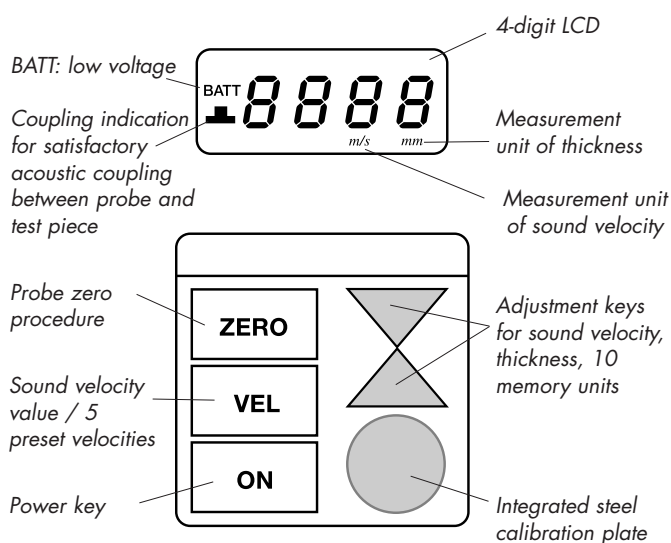
Optional accessories

- Transducers for special applications

ULTRASONIC THICKNESS GAUGE DELTA TT-130™

Handheld gauge for metals, glass, plastics featuring 0.01mm reading

- Easy to operate ultrasonic wall thickness gauge
- Suitable for metal, glass homogeneous plastics
- Standard 5 MHz transducer included
- Sound velocity range up to 9999m/s
- Clear 4-Digit LCD display
- Display resolution 0.01mm
- Memory for 10 readings
- 5 pre-set sound velocities for repeating applications



Technical specifications

Measuring range (steel)	1.2mm - 225.0mm with 5 MHz transducer
Measuring range for steel pipes	Minimum 3mm thickness x 20mm diameter
Transducer frequency	Standard 5 MHz, diameter probe 10mm
Display resolution	0.01 mm
Measurement accuracy	±(1%H+0.1)mm
Calibration	4.0mm steel base plate integrated
Surface temperature	Standard -10°C to +60°C (high temperature see TT-120)
Measuring units	Mm
Sound velocity range	1000 - 9999m/s
Resolution velocity range	1 m/s
Display	4-Digit LCD
Memory	Storage of 10 thickness readings
Battery indicator	Low battery voltage indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	250 hours continuously
Dimensions	126mm x 68mm x 23mm
Weight	Approx. 250gr including batteries

Standard delivery

- Main unit
- Transducer 5 MHz
- Integrated steel calibration plate 4.0mm
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

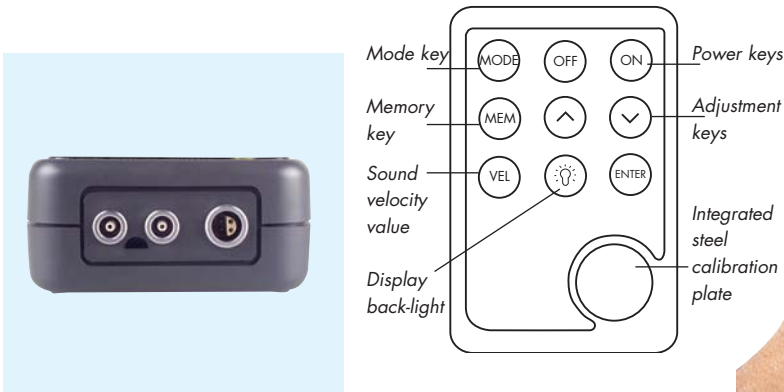
Optional accessories

- Transducers for special applications

ULTRASONIC THICKNESS GAUGE TT-300™

Handheld gauge with external transducer series for thickness measurement of metals, glass and plastics

- Easy to operate ultrasonic wall thickness gauge for metals, glass, plastics
- Display resolution menu selectable
- Automatic zero setting
- Two-point calibration possible
- LCD display with back-light
- Min. mode for minimum thickness measurement
- Mm/inch selectable
- Data output RS-232
- Large internal memory for 500 readings
- Including protection case, couplant and carrying case



Technical specifications

Measuring range (steel)	5.0mm - 300.0mm with 2 MHz transducer 1.2mm - 225.0mm with 5 MHz transducer
Transducer frequency	Standard 5 MHz, diameter probe 10mm
Display resolution	Menu selectable, low 0.1mm, high 0.01mm
Measurement accuracy	0.75mm - 9.99mm: ± 0.05 mm 10.0mm - 99.99mm: $(0.5\%H + 0.01)$ mm 100.0mm - 300.0mm: $(1\%H + 0.1)$ mm
Measuring units	mm/inch selectable
Sound velocity range	1000 - 9999m/s
Display	LCD with back-light
Display Min. mode	Display current thickness or minimum thickness (menu selectable)
Alarm function	Minimum / Maximum limits exceeding alarm
Calibration setting	Automatic zero setting, two-point calibration possible
Data output	RS-232 serial port, Baud rate selectable to printer or pc
Memory	Storage of 500 thickness readings
Surface temperature	Standard -10°C to +60°C (high temperature see TT-320)
Battery indicator	Low battery indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	With back-light 60 hours continuously Without back-light 100 hours continuously
Dimensions	152mm x 74mm x 35mm
Weight	370gr

Standard delivery

- Main unit
- Integrated steel calibration plate
- Transducer 5 MHz
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

Optional accessories

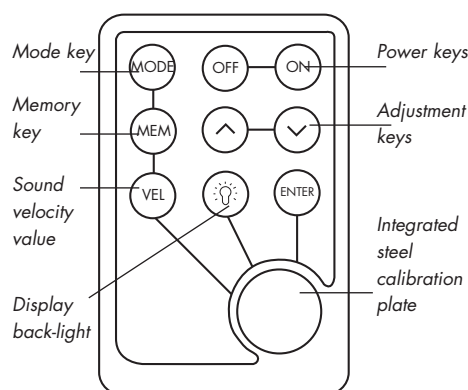
- Transducers for special applications
- TA-220 printer with cable
- Software Dataview TT-300



ULTRASONIC THICKNESS GAUGE TT-310™

Handheld gauge with external transducer for thickness measurement of metals, glass and plastics

- Easy to operate ultrasonic wall thickness gauge for metals, glass, plastics
- Automatic zero setting
- Two-point calibration possible
- LCD display with back-light
- Min. mode for minimum thickness measurement
- Mm/inch selectable
- Large internal memory 500 readings
- Including protection case, couplant and carrying case



F1 5M LIMIT MENU
5900 m/s
 BATT MIN HIGH

Technical specifications

Measuring range (steel)	1.2mm - 225.0mm with 5 MHz transducer
Transducer frequency	Standard 5MHz, diameter probe 10mm (no other transducer possible)
Display resolution	0.1mm
Measurement accuracy	0.75mm - 9.99mm: ±0.05mm 10.0mm - 99.99mm: (0.5%H+0.01)mm 100.0mm - 300.0mm: (1%H+0.1)mm
Measuring units	mm/inch selectable
Sound velocity range	1000 - 9999m/s
Display	LCD with back-light
Display Min. mode	Display current thickness or minimum thickness (menu selectable)
Calibration setting	Automatic zero setting, two-point calibration possible
Memory	Storage of 500 thickness readings
Surface temperature	Standard -10°C to +60°C (high temperature see TT-320)
Battery indicator	Low battery indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	With back-light 60 hours continuously Without back-light 100 hours continuously
Dimensions	152mm x 74mm x 35mm
Weight	370gr

Standard delivery

- Main unit
- Integrated steel calibration plate
- Transducer 5MHz
- Ultrasonic couplant
- Batteries AA 1.5V (2 pcs)
- Manual
- Certificate
- Carrying case

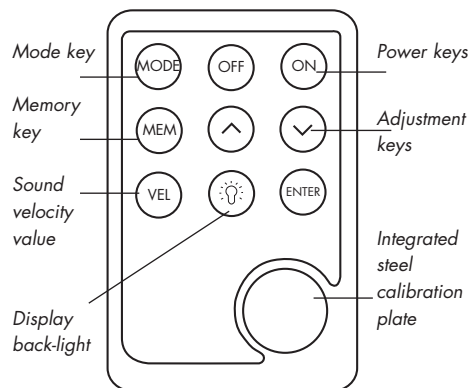
ULTRASONIC THICKNESS GAUGE TT-320™

Handheld gauge for thickness measurement of high temperature steel

- Easy to operate handheld ultrasonic thickness gauge
- Special model for testing thickness of high temperature steel surface up to 300°C
- Min. mode for minimum thickness measurement
- Two-point calibration possible
- Automatic zero setting
- LCD display with back-light
- Mm/inch selectable
- Data output RS-232
- Large internal memory 500 readings
- Including protection case, couplant and carrying case



Special high temperature transducer



F1 5M LIMIT MENU
5900 m/s
BATT MIN HIGH

Technical specifications

Measuring range (steel)	5.0mm - 80.0mm with 5 MHz transducer, high temperature 1.2mm - 225.0mm with 5 MHz transducer
Transducer frequency	Standard 5 MHz, diameter probe 14mm
Display resolution	0.1mm
Measurement accuracy	0.75mm - 9.99mm: ±0.05mm 10.0mm - 99.99mm: (0.5%H+0.01)mm 100.0mm - 300.0mm: (1%H+0.1)mm
Measuring units	mm/inch selectable
Sound velocity range	1000 - 9999m/s
Display	LCD with back-light
Display Min. mode	Display current thickness or minimum thickness (menu selectable)
Calibration setting	Automatic zero setting, two-point calibration possible
Memory	Storage of 500 thickness readings
Surface temperature	Standard -10°C to +300°C
Battery indicator	Low battery indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	With back-light 60 hours continuously Without back-light 100 hours continuously
Dimensions	152mm x 74mm x 35mm
Weight	370gr

Standard delivery

- Main unit
- Integrated steel calibration plate
- Transducer ZW5P
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

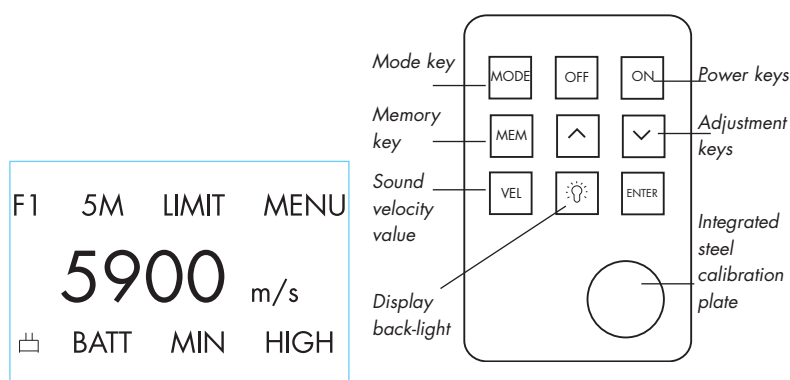
Optional accessories

- Transducer 5MHz

ULTRASONIC THICKNESS GAUGE TT-340™

Handheld gauge with external transducer for casting materials

- Easy to operate handheld ultrasonic thickness gauge especially casting materials
- Min. mode for minimum thickness measurement
- Two-point calibration possible
- Automatic zero setting
- LCD display with back-light
- Mm/inch selectable
- Large internal memory 500 readings
- Including protection case, couplant and carrying case



Technical specifications

Measuring range	5.0mm - 40.0mm (cast iron) 5.0mm - 300.0mm (steel)
Transducer frequency	Standard 2 MHz, diameter probe 22mm
Display resolution	0.1mm
Measurement accuracy	0.75mm - 9.99mm: ±0.05mm 10.0mm - 99.99mm: (0.5%H+0.01)mm 100.0mm - 300.0mm: (1%H+0.1)mm
Measuring units	mm/inch selectable
Sound velocity range	1000 - 9999m/s
Display	LCD with back-light
Display Min. mode	Display current thickness or minimum thickness (menu selectable)
Calibration setting	Automatic zero setting, two-point calibration possible
Memory	Storage of 500 thickness readings
Surface temperature	Standard -10°C to +60°C
Battery indicator	Low battery indicator
Power supply	2 pcs AA batteries 1.5V
Operation time	With back-light 60 hours continuously Without back-light 100 hours continuously
Dimensions	152mm x 74mm x 35mm
Weight	370gr

Standard delivery

- Main unit
- Integrated steel calibration plate
- Transducer 2 MHz
- Batteries AA 1.5V (2 pcs)
- Ultrasonic couplant
- Manual
- Certificate
- Carrying case

Optional accessories

- Transducer 5MHz

ULTRASONIC COATING THICKNESS GAUGE CV-CG600™

Handheld gauge for paint, plastics, enamel and other insulating coating

- Designed for non-destructive coating thickness measurement
- Paint, varnish, plastics and other insulation coatings applied on wood, plastics, glass, ceramics, etc. as well as for polymer layers on metal
- Total thickness as well as the individual layers in one measuring process
- Appropriate for use in laboratory
- Data output to printer CV-CG300 or pc



Technical specifications

Field of applications and measuring ranges:	Single layers: 10µm...500µm Multi-layers: max 500µm total coating thickness Wall thickness of metals: 0.1...8mm Wall thickness of plastics: 0.2...3mm
Resolution	1µm
Measuring uncertainty < 100µm	± (2µm + 3 %*) (*of reading)
Measuring uncertainty > 100µm	± (2µm + 2 %*) (*of reading)
Display	Alphanumeric with 4 large digits
Operation language	English
Standards	DIN, ISO, ASTM, BS
Statistics	n, x- , s, kvar, max, min, with time and date of print-out and reading
Data memory	max. 10,000 measuring values in max. 500 batches
Limits	With optical and acoustic warning when limits are exceeded
Interface	RS-232
Ambient temperature	-15°C - 55°C
Power supply	2,4 V 2 x 1,2 V AA NiMH or NiCd (approx. 2,500 measurements)
Charger	90 V~ to 264 V (charging time: 4 hours)
Dimensions	Gauge 150mm x 82mm x 35mm
Weight	Approx. 150gr

Standard delivery

- Gauge with probe
- Charger
- Rechargeable batteries
- Plastic case
- Coupling liquid
- Software
- Manual
- CV Instruments certificate

Optional accessories

- Rubber protection case with mounting device
- Printer CV-CG300
- Belt case set (two cases of different size for gauge and accessories)
- Carrying case for gauge
- Carrying case for gauge and printer

PINHOLE DETECTOR CV-PT900™

Detector to test on pinholes and porosity in coatings

- Light-weight and hand-held test electrodes provide convenient operation
- Test method conforms to DIN 55 670
- 15 sensitivity settings
- Pre-set test voltages related to material thickness
- Backlit display to indicate current test voltage, number of pores and material thickness
- High voltage probe with equipment-on and pore indicator tested
- Residual voltage indicator for variable test voltages of industrial steel constructions
- Alarm signal when exceeding pore limit setting (Limit)
- Electrical safety provisions according to VDE 0411, part 1: probe voltage and maximum discharge rate stay below the limit values as specified by the safety standard.
- Power supply: AC or battery operated via integrated storage battery (C-cells)



Special electrode,
e.g. to measure on tubes

Technical specifications

Models available	0.5...7 kV (CV-PT900) 6...35 kV (CV-PT901)
Coating thickness	0.03mm...1.7mm (CV-PT900) 1.4mm...11.3mm (CV-PT901)
Dimensions/weight high voltage probes	L x ø : 274mm x 63mm /550gr
Main unit	
Voltage	DC
Test voltage indication	LC-Display, 3-digit
Tolerance	±(0.1 kV + 3% of reading)
Alarm tone	90 dB, 0.1 s/Pore, continuous tone in case of short-circuit
Signal output	potential free, U _{max.} : 100 V, I _{max.} : 0.4 A
Supply voltage	4 C-cells, IEC LR 14, 3.5 Ah, NiMH, replaceable
Battery life at max. voltage	Approx. 20 h (CV-PT900) Approx. 10 h (CV-PT901)
Battery charging time	4 hrs (quick charge)
Charger	110-230V, 50-60Hz, automatic switch
Continuous charging	Is permitted and allows continuous use on the mains
Operating temperature	0°...+50°C/32°...+122°F
Standards	DIN 55 670, DIN 50191 (VDE 0104), DIN EN 61010/Part 1 (VDE 0411/Part 1)
Dimensions	225mm x 150mm x 85mm (L x W x H)
Weight	1400gr

Standard delivery

- Main unit
- Rugged plastics carrying case
- Control unit with integrated storage battery
- Connecting cable probe-control unit
- High voltage probe
- Metal sweeper electrode
- Silicon-rubber electrode, 200mm (0.7 ft) width
- Earthing magnet
- Earthing clamp
- Equipotential cable, 5 m (16 ft) length
- Power cable
- Shoulder belt
- Manual
- Certificate

Optional accessories

- Aluminium case
- Various special probes (ask for details)
- Various special electrodes (ask for details)
- 3-pin plug, cable-free
- Connecting cable for control unit and high voltage probe (5m, 10m)
- Earthing rod
- Earthing/equipotential cable (10m)

VIBRATION ANALYZER VIBROPEN TV-200™

Pen-type machine vibration checker

- Machinery checker for predictive maintenance of production machinery
- For quick checking of unbalance, misalignment, bearings and gears
- Holds value after each test
- Handy, battery operated instrument
- Large frequency range
- Automatic switch-off after 40 seconds
- Low battery voltage indication



Technical specifications

Measurement range	RMS vibration velocity 0.1 mm/s to 199.9 mm/s
Frequency range	10 Hz to 1 kHz
Display	4 digit LCD display Hold value of last reading
Accelerometer	Integrated
Power supply	1.5V button cell batteries (2 pcs) Auto shut-off after 40 seconds
Battery capacity	Approx 5 hours continuously
Operating temperature	0°C to 40°C, < 85% RH
Dimensions	150mm x 22mm x 18mm
Weight	Approx 55gr including batteries

Standard delivery

- Main unit
- Small pocket bag
- Batteries SR44 (2 pcs)
- Manual
- Certificate

VIBRATION ANALYSER TV-100™

Portable analyser with integral printer and external accelerator

- Compact analyser for predictive maintenance of production machinery
- For checking of unbalance, misalignment, bearings and gears
- Storage capacity for 10 tests results
- Piëzo-electric accelerometer with magnetic base
- Large frequency range
- Rechargeable batteries and charger included
- Low battery voltage indication
- Printer included



Technical specifications

Measurement range	
Acceleration	RMS acceleration measurement, full scale 199.9m/s ² Frequency range 10Hz to 10 KHz
Velocity	RMS vibration velocity, full scale 19.99cm/s Frequency range 10Hz to 1KHz
Displacement	Equivalent peak to peak displacement, full scale 1.999mm Frequency range 10Hz to 500Hz
Display	LCD, test value in 3.5 large digits
Accelerometer Probe	External piëzo-electric accelerometer with magnetic base
Sensitivity max	25 mV/g
Transverse sensitivity	4.5%
Magnetic base	CZ-4
Data output	To printer (on top included) all test data
Memory	10 test results
Standard	Conforms to ISO 2954
Power supply	Ni-MH rechargeable batteries 1.2V (4 pcs) Battery charge control
Battery capacity	10 hours continuously
Operating temperature	0°C to 40°C
Dimensions	270mm x 86mm x 47mm
Weight	650gr

Standard delivery

- Main unit TV-100
- Printer for TV-100
- Accelerometer
- Magnetic base
- NiMH batteries (4 pcs)
- Battery charger
- Manual
- Certificate
- Protective carrying case

Optional accessories

- Printer paper (10 rolls)

VIBRATION ANALYSER TV-300™

Portable analyser with multi-function display

- Compact state-of-the-art analyser for predictive maintenance of production machinery
- For checking of unbalance, misalignment, bearings and gears
- Analyses acceleration, velocity, displacement, rotation speed, frequency
- Three methods of display;
 - SPECIAL mode shows peak acceleration, velocity in RMS and displacement in peak-to-peak simultaneously
 - COMMON mode shows only one of the above options but on extra large display for easy reading
 - SPECTRUM mode shows spectrum
- Status bar on display with warning and alarm limits
- LCD with back-light function
- Auto analysis of max. value in spectrum
- RS-232 output to printer TA-220 or PC (optional software)



Technical specifications

Measurement range	
Acceleration	0.1m/s ² - 392 m/s ² Frequency range 10-200Hz, 10-500Hz, 10Hz-1KHz, 10Hz-10KHz
Velocity	0.01 cm/s - 80 cm/s Frequency range 10Hz to 1 KHz
Displacement	0.001mm -18.1mm (peak to peak) Frequency range 10Hz to 500Hz
Display	LCD with back-light and adjustable contrast
Accelerometer probe	External piëzo-electric accelerometer with magnetic base
Accuracy	≤ ±5%
Data output	RS-232, to printer all test data or to PC
Memory	25 points, each 62 data, one spectrum
Power supply	Li-ion rechargeable batteries Battery charge control
Battery capacity	20 hours continuously
Operating temperature	0°C to 40°C
Dimensions	171mm x 78mm x 28mm
Weight	230gr

Standard delivery

- Main unit
- Accelerometer probe
- Magnetic base
- Needle probe tip
- Li-ion battery
- Battery charger
- Manual
- Certificate
- Protective carrying case

Optional accessories

- Printer TA-220 and cable
- Data management software Dataview TV-300



VIBRATION METER “VIBROCHECK” SERIES™

For periodical inspection of machines with integrated probe CV-VG100

- Basic compact analyser for predictive maintenance of production machinery
- For checking of unbalance, misalignment, bearings and gears
- Integrated accelerometer
- Low frequency mode Lo-RMS to test low vibrations
- High frequency mode to test average acceleration (Hi AVE) and single peak displacement (Hi PEAK)
- Large frequency range
- Battery power 9V



Technical specifications

Standard	Conforms to ISO 2954, ISO 2372
Accuracy	± 5% of velocity value (± 2 digits)
Acceleration	0.0 to 19.99mm/s ² (Hi AVE mode)
Velocity	RMS 0.0-199.9mm/s (Lo RMS mode)
Displacement	Single peak value 0.0 - 199.9mm (Hi PEAK mode)
Frequency range	10Hz - 1 kHz (Lo) 1 kHz - 10 kHz (Hi)
Display	LCD, test value in 3.5 large digits
Power supply	One 9V battery (20 hours continuous use)
Dimensions	185mm x 90mm x 34mm
Weight	260gr

Standard delivery

- Main unit CV-VG100
- Integrated probe
- 9V battery
- Protective carrying case
- Manual
- CV Instruments certificate

VIBRATION METER "VIBROCHECK" SERIES™

For periodical inspection of machines with external probe CV-VG110

- Basic compact analyser for predictive maintenance of machinery
- For checking of unbalance, misalignment, bearings and gears
- External accelerometer with cable and magnetic base
- Low frequency mode Lo-RMS to test low vibrations
- High frequency mode to test average acceleration (Hi AVE) and single peak displacement (Hi PEAK)
- Large frequency range
- Battery power 9V



Technical specifications

Standard	Conforms to ISO 2954, ISO 2372
Accuracy	Vibration $\pm 5\%$ of display value (± 2 digits)
Probe vibration	External accelerometer with magnetic base and cable
Acceleration	0.1 to 199.9m/s ² (Hi AVE mode)
Velocity	RMS 0.001-19.99cm/s (Lo RMS mode)
Displacement	Single peak value 0.001 - 1.999mm (Hi PEAK mode)
Frequency range	10Hz to 1 kHz (Lo) 1KHz - 10kHz (Hi)
Display	LCD, test value in 3.5 large digits
Power supply	One 9V battery (20 hours continuous use)
Dimensions	185mm x 90mm x 34mm
Weight	300gr incl. battery

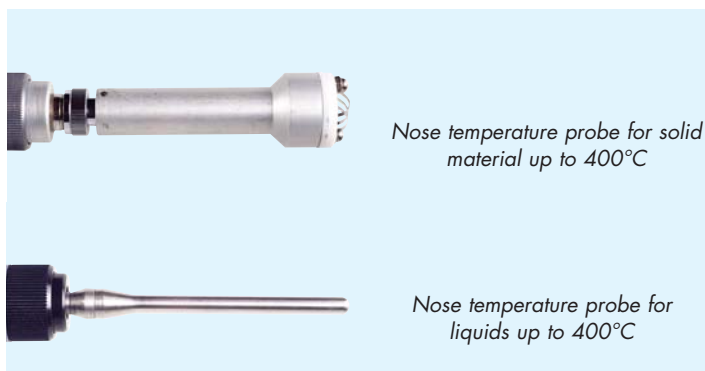
Standard delivery

- Main unit
- External probe with magnetic base and cable
- 9V battery
- Protective carrying case
- Manual
- CV Instruments certificate

VIBRATION METER "VIBROCHECK" SERIES™

For periodical inspection of machines with external probe and temperature reading CV-VG120

- Basic compact analyser for predictive maintenance of machinery
- For checking of unbalance, misalignment, bearings and gears
- External accelerometer with cable and magnetic base
- Temperature probes for contact temp and liquids
- Low frequency mode Lo-RMS to test low vibrations
- High frequency mode to test average acceleration (Hi AVE) and single peak displacement (Hi PEAK)
- Large frequency range
- Battery power 9V



Technical specifications

Standard	Conforms to ISO 2954, ISO 2372
Accuracy	Vibration $\pm 5\%$ of display value (± 2 digits) Temperature: $\pm 1\%$ of display value (± 1 digit)
Probe vibration	External accelerometer with magnetic base and cable
Probe temperature solid	Test metal surface temperature to detect hitches max 400°C
Probe temperature liquids	Test liquids temperature max 400°C
Acceleration	0.1 to 199.9m/s ² (Hi AVE mode)
Velocity	RMS 0.001-19.99cm/s (Lo RMS mode)
Displacement	Single peak value 0.001 - 1.999mm (Hi PEAK mode)
Frequency range	10Hz to 1 kHz (Lo) 1KHz - 10kHz (Hi)
Display	LCD, test value in 3.5 large digits
Power supply	One 9V battery (20 hours continuous use)
Dimensions	185mm x 90mm x 34mm
Weight	300gr incl. battery

Standard delivery

- Main unit
- External probe with magnetic base and cable
- Nose temperature probe for solid material up to 400°C
- Nose temperature probe for liquids up to 400°C
- 9V battery
- Protective carrying case
- Manual
- CV Instruments certificate

STEREO ZOOM MICROSCOPE SERIES CV-MZ630B™

Binocular microscope with incident and transmitted illumination

- High quality stereo zoom microscope
- Delivers sharp high contrast images
- Excellent zoom ratio of 1:6.5
- Wide zoom magnification range from 2.1x - 225x (depending on configuration)
- Working distance range of 40mm - 314mm simplifies observation deep into the specimen
- Perfect for industrial inspection and for assembly purposes



CV-MZ630B series stereo zoom microscopes

Model	CV-MZ630B/10	CV-MZ630B/15	CV-MZ630B/20	CV-MZ630B/25
With ocular	With ocular	With ocular	With ocular	With ocular
WF10x	WF15x	20x	25x	
With optional auxiliary objective	Total magnification	Total magnification	Total magnification	Total magnification
non	7x-45x	10.5x-67.5x	14x-90x	17.5x-112.5x
0.3x	2.1x-13.5x	3.2x-20.3x	4.2x-27x	5.3x-33.8x
0.5x	3.5x-22.5x	5.3x-33.8x	7x-45x	8.8x-56.3x
0.75x	5.3x-33.8x	7.9x-50.6x	10.5x-67.5x	13.1x-84.4x
1.5x	10.5x-67.5x	15.8x-101.3x	21x-135x	26.3x-168.8x
2x	14x-90x	21x-135x	28x-180x	35x-225x

Technical specifications

Magnification type	Zoom
Total magnification	7x - 45x (with standard oculars)
Zoom ratio	1:6.5 (0.7 - 4.5x)
Oculars	WF10x wide focus (standard)
Field of view	33mm - 5.1mm diameter
Working distance	108mm (standard)
Binocular tubes	Inclined 45°
Interpupillary distance	Adjustable 55mm - 75mm
Diopter adjustment	±5 Diopter (two eyepieces adjustable)
Eyepiece tube	Rotatable 360°
Camera system	Non
Light system	Incident and transmitted halogen illuminator 6V, 15W
Power	220V / 50Hz

Standard delivery

- Binocular stereo zoom microscope body
- Stand with incident and transmitted light and cylindrical pillar
- Oculars wide focus WF10x (pair)
- Spare lamps
- Power cable
- CV Instruments certificate

Optional accessories

- Oculars WF15x, 20x, 25x
- Auxiliary objectives 0.3x, 0.5x, 0.75x, 1.5x, 2x
- Pillar extensions for large specimen
- Spare lamps

STEREO ZOOM MICROSCOPE SERIES CV-MZ630T™

Trinocular microscope featuring optical channel for CCD camera attachment

- Stereo zoom microscope with extra optical tube for camera's
- Delivers sharp high contrast images
- Excellent zoom ratio of 1:6.5
- Wide zoom magnification range from 2.1x - 225x (depending on configuration)
- Working distance range of 40mm - 314mm simplifies observation deep into the specimen
- Perfect for industrial inspection and for assembly purposes



CV-MZ630T series stereo zoom microscopes

Model	CV-MZ630T/10	CV-MZ630T/15	CV-MZ630T/20	CV-MZ630T/25
	With ocular WF10x	With ocular WF15x	With ocular 20x	With ocular 25x
With optional auxiliary objective	Total magnification	Total magnification	Total magnification	Total magnification
non	7x-45x	10.5x-67.5x	14x-90x	17.5x-112.5x
0.3x	2.1x-13.5x	3.2x-20.3x	4.2x-27x	5.3x-33.8x
0.5x	3.5x-22.5x	5.3x-33.8x	7x-45x	8.8x-56.3x
0.75x	5.3x-33.8x	7.9x-50.6x	10.5x-67.5x	13.1x-84.4x
1.5x	10.5x-67.5x	15.8x-101.3x	21x-135x	26.3x-168.8x
2x	14x-90x	21x-135x	28x-180x	35x-225x

Technical specifications

Magnification type	Zoom
Total magnification	7x - 45x (with standard oculars)
Zoom ratio	1:6.5 (0.7 - 4.5x)
Oculars	WF10x wide focus (standard)
Field of view	33mm - 5.1mm diameter
Working distance	108mm (standard)
Binocular tubes	Inclined 45°
Interpupillary distance	Adjustable 55mm - 75mm
Diopter adjustment	±5 Diopter (two eyepieces adjustable)
Eyepiece tube	Rotatable 360°
Camera system	Tube for camera attachment
Light system	Incident and transmitted halogen illuminator 6V, 15W
Power	220V / 50Hz

Standard delivery

- Trinocular stereo zoom microscope body
- Stand with incident and transmitted light and cylindrical pillar
- Oculars wide focus WF10x (pair)
- Spare lamps
- Power cable
- CV Instruments certificate

Optional accessories

- Oculars WF15x, 20x, 25x
- Auxiliary objectives 0.3x, 0.5x, 0.75x, 1.5x, 2x
- C-mount adaptor for CCD - camera
- Photo camera adaptor
- Pillar extensions for large specimen
- Spare lamps

MEASURING MICROSCOPE CV-MM900™

Non contact XYZ depth measuring microscope

- Ideal microscope for measuring precision components in 2 and 3 dimensions
- Specifically designed for accurate and repeatable measurements of thickness and depth
- Measures surface profile, flatness, roughness and alignment in X,Y and Z-Axis
- Z-Axis measurement with the Precise Focusing Image Module
- Three objective lenses available 5X, 20X, 50X
- Communication protocol with Nikon Data-Process system
- Obtains high accurate depth measurements simply by coinciding the upper and lower portions of a graticule

Applications

Various measurements such as:

- Height of lead frame
- Wafer bump height
- Height of solder
- Strain of lead frame
- Height of bonded portion of lead wire
- Steps on hybrid IC
- Terminal steps on multi-layer pc boards
- Recesses on cans
- Depth of metallic moulds



Technical specifications

Main body	Focus unit with reflector
Microscope stand	Coarse focus range 65mm by alley guide rack and pinion mechanism Semi-coarse and fine focus range 25mm (cross-roller guide mechanism)
Sample height	0 - 77.5mm
Optical body (head)	Binocular (correct image), distance of pupil 53mm-73mm (45dgr) with C-mount
Eyepieces	WF-10X, field view 18 WF-10X with crossline scale reticle, field view 19 frame
Precise focusing Indicator	Back-stripe graticule, white-stripe graticule, without graticule, 3 stage selector, halogen illuminator (6V-20W) built-in transformer
Nosepiece	Quintuple
Objective	M Plan 10X, NA 0.25, WD 10.6mm
Measuring stage	
O3L crosswise movement	100mm
Fore and aft movement	50mm
Reader	Photoelectric encoder
Maximum weight of sample	5.0kg
Stage weight	19.0kg
Stage face	Crosswise 285mm x fore-and-aft 192mm
Stage dimension	413mm x 313mm x 90mm (including handle)
Z-Axis Indicator	ID-F125 reading to 1µm (25mm), AC-adaptor
Dimension of body	280 (W) x 348 (D) x 457.5 (H) mm
Weight main body	37kg
Weight O3L stage	19kg

Standard delivery

- Main body focus unit with reflector
- Stand with transformer
- Nosepiece quintuple
- Optical body binocular
- Measuring stage 100mmx150mm with linear scale and stage glass
- 2-axis counter (Nikon)
- Z-axis indicator 25mm travel
- Eyepiece WF10x (Field 18)
- Eyepiece WF10X reticle
- Objective M Plan 10x, NA 0.25, WD 10.60

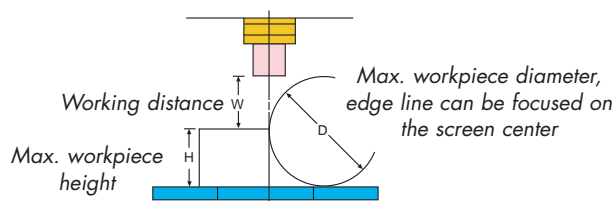
Optional accessories

- Objective MPlan 5X, NA 0.10, WD 19.6mm
- Objective MPlan 20X, NA 0.40, WD 12mm
- Objective MPlan 50X, NA 0.50, WD 10.6mm
- Transmitted illuminator (lamp house)
- Stage 250mm x 100mm

PROFILE PROJECTOR CV-PP300™

300mm screen projector with multi-function readout unit, printer and data output

- Top quality profile projector highly versatile and easy to operate
- Large travel range 150mm x 50mm (6"x 2") as standard
- Linear scale stage with 0.001mm resolution
- Fine ground glass screen for clear image with cross hairs
- Screen complete with cross hair lines and chart clips
- Built-in profile and surface illumination
- 10x, 20x, 50x, 100x projection lenses available
- Data output via RS-232 interface
- Display-readout unit CV-DC300 included in standard delivery



Projection capacity (unit mm)

Magnification	10x	20x	50x	100x
View field diameter	30	15	6	3
Working distance W	77.7	44.3	24.5	25.3
Max. workpiece height H	80	80	80	80
Max. workpiece diameter, edge line can be focused on the screen center D	160	130	55	60

Technical specifications

Stage XY travel range	150mm x 50mm (X x Y)
Stage Z-axis travel range	90mm
Stage effective glass size	196mm x 96mm
Stage dimensions	340mm x 152mm
Stage measuring device	Built-in linear scales
Stage resolution	0.001mm
Screen rotary range	312mm diameter, effective diameter 300mm
Digital angle display	0-360°
Angle resolution	0.01° or 1'
Functions	Zero set, ABS/INC selection, mm/inch selection, 1/2 calculation
Projection lens	10x, 20x, 50x, 100x (selection see options)
Magnification accuracy	Contour: ±0.1% or less Surface: ±0.15% or less
Contour illumination	Light source: 24V, 150W halogen lamp Method: Zooming telecentric illumination Function: 2-step brightness selection
Surface illumination	Light source: 24V, 150W halogen lamp Method: Vertical surface using half-transparent mirror
Filters light	Green, blue
Data output	RS-232 from counter
Printer	Integrated
Power supply	220V AC / 50-60Hz
Dimensions	780mm x 550mm x 1140mm
Weight	180kg

Standard delivery

- Projector unit
- CV-DC300 digital readout unit
- Shield
- Power cable
- Chart clips (4 pcs)
- Spare fuses 5A/3A
- Spare lamps 24V/150w
- Manual
- CV Instruments certificate

Optional accessories

- Projection lens 10x with half reflecting mirror
- Projection lens 20x with half reflecting mirror
- Projection lens 50x with half reflecting mirror
- Projection lens 100x with half reflecting mirror
- Rotary table 360°
- Swivel centre support
- Holder with clamp
- V-block with clamp
- Overlay charts
- Software pc for CV-PP300

READOUT UNIT CV-DC300 FOR PROJECTOR CV-PP300™

Readout unit with various geometrical calculation features

- Readout unit for profile projector CV-PP300
- XY axis and Q/Z zero axis and angle reading
- Point, Line, Circle various calculations
- Features 10 user programmes and 1000 steps of each programme
- Polarity/Cartesian coordinate transformation
- Segmented linear error correction
- RS-232 interface data output to pc or printer
- Foot switch or edge detector optional
- Power interrupted memory (100 data permanent)



Technical specifications

Display axis	X, Y, Q/Z axis, 7 digit with sign (Q/Z axis can be defined as linear axis or rotary encoder degree), CD 16 characters with back-light
Functions	
Measurement	Point, Line, Circle multiple point calculation
Preset	Point, Line, Circle, Distance, Angle
Construct	Point, Line, Circle, Distance, Angle
Intersection point	Line-Line, Line-Circle, Circle-Circle, Point-Line
Middle point	Point-Point, Point-Circle (central)
Line	Circle-Circle, Parallel line, Perpendicular line, Bisector Line
Circle	Distance Circle, Multiple Circle
Distance	Point-Point, Point-Line, Point-Circle, Line-Circle, Circle-Circle
Angle	Line-Line
Settings	Axis skew and original point setting
Program	10 user programs and 1000 steps p. program
Coordinates	Polarity/Cartesian coordinate transformation
Units	mm/inch
Reading	INC/ABS
Encoder correction	Linear and segmented, linear error correction, Encoder resolution setting
Data output	RS-232, 9P D-type female, <-5V(1), >+5V(0)
Printer interface	Centronix (15P), Centronix printer (optional)
Foot switch	Via external interface (optional) contact closure
Edge detector	Via external interface: TTL or isolated photo couple (optional)
Memory	STORE and RECALL (100 permanent/10 temporary), Power interrupted memory
Power	5.1V (DC), 2.5A
Scale signal	Quadruple TTL, 50 KHz (Max)
Dimensions	297mm x 184mm x 48mm
Weight	1360gr

Standard delivery

- CV-DC300 readout unit
- Data cables
- Power cable
- Manual
- CV Instruments certificate

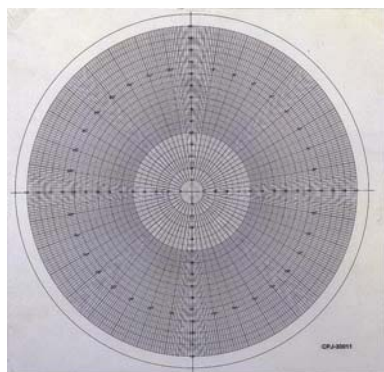
Optional accessories

- Support for mounting to CV-PP300
- Foot switch with cable
- Edge detector with cable
- External interface for foot switch and/or edge detector

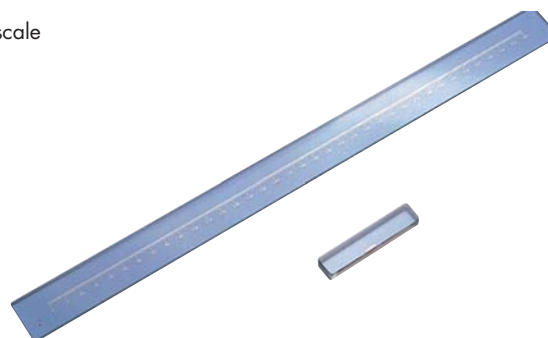
PROFILE PROJECTOR CV-PP300™

Accessories

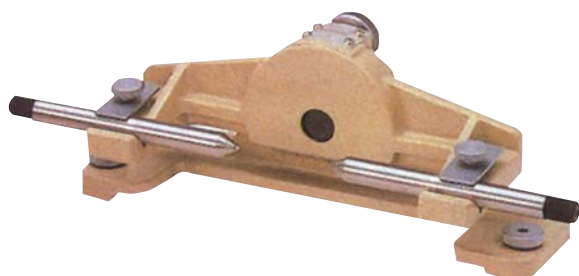
Charts



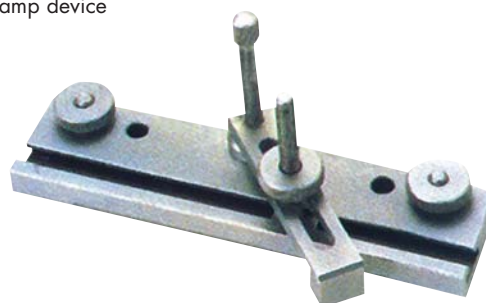
Microscale



Swivel support



Product clamp device



Rotary table



Colour filter



Objectives





Instruments

HARDNESS TESTERS - DUROMETERS - SURFACE FINISH TESTERS
CONTOUR MEASUREMENT - COATING THICKNESS GAUGES
ULTRASONIC THICKNESS GAUGES - WALL THICKNESS GAUGES
VIBRATION METERS - MICROSCOPES - PROFILE PROJECTORS

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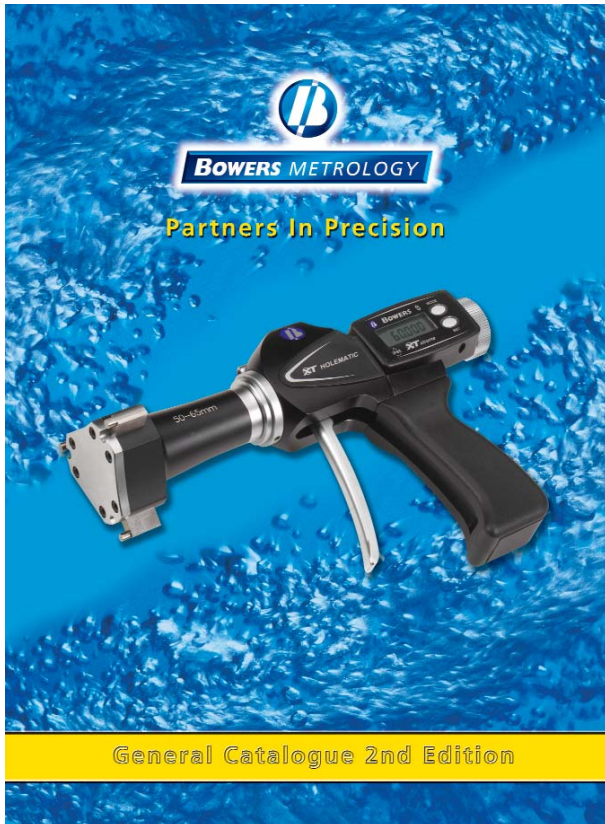
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